Keeping Up With the Joneses

FROM a commercial standpoint, 1934 ended on high. It was a better year than 1933, and America goes into 1935 with the brightest outlook, the widest business activity and biggest volume of consumption ahead of it since the decline.

The years 1933 and 1934 were constructive, progressive years. In them, foundations have been laid for the substantial resumption of commerce and industry on a vast scale unprecendented in this country's economic history. That America is surely entering a period of consistently expanding industry, employing more men at better wages, more capital at dependable earnings; with broader co-operation between government and private interests, between labor and capital; in a united campaign for a new triumphal era which cannot fail to result, is apparent to even the most pessimistic standpatter of the old regime.

We are now well on our way back to American standards of living and prosperity. Every reading of the thermometer by business diagnosticians confirms that fact.

Dr. Steel puts his thermometer in his industrial patient's mouth—what does it register?—39.2 per cent. Only a few months ago, it was 19 per cent, and all the relatives were alarmed at its anemic condition. But to-day's reading shows that circulation has revived, the blood is buoyant again, the progressive gain during the past ten weeks insures an early return to normality.

For the past three years, Doctors Dun and Bradstreet have been giving expert attention to General Business Activity. Here is the latest bulletin from that sick division of industry:

> "Dun and Bradstreet reported inventories of holiday goods at the lowest level in years, and Christmas sales 25 per cent to 40 per cent higher than 1933. Its business thermometer stood the highest in three and a half years."

Here we have a most influential patient showing rapid return to robust activity.

On December 27, Doctor Edison E. Institute reported on the status of General Utility Division as follows:

> "The output of electric power for the week ending December 22nd climbed to the highest point since February 1st, 1930, (almost four years ago) with activity mounting in the steel mills, textile factories, automobile plants, and general household consumption throughout the country."

Here is another valuable contributor to the national wealth and employment staging a sustained and vigorous comeback.

Continued sane adjustment in every division of trade and commerce by increasing multitudes of business men and citizens in co-operation with the New Deal plans for economic business and social recovery will insure the new era.

Mr. Jones now realizes that he must help Mr. Smith to better his ability to purchase more of Mr. Jones's goods, and Mr. Smith must help Mr. Jones to make more goods at lower prices for Mr. Smith to buy. That is the true economic and consistently prosperous manner in which to "keep up with the Joneses." Thank God that the Smiths and the Joneses now see eye to eye on that common sense economic verity.

Nineteen Thirty-Five is to be a Happy New Year!

+ EDITORIAL +

Once Each Year

THERE is much talk and also much is written at this time each year about good resolutions. According to some individuals, resolutions are made only for the opportunity thus presented for breaking them. With others, resolutions are made with a sincerity of purpose and a hope that they may be possible of fulfillment; or perhaps no resolutions are made at all as it may be believed that the dawn of each new day brings with it new hopes, new opportunities for doing good, and new inspiration for greater service.

Whatever the concept, since yesterday is gone and tomorrow is not yet here, there is no better time than *now* for making an audit of profits and losses—not a financial audit, but rather a mental and spiritual one.

Examine closely your thought habits. How many new ideas have you utilized in the management and operation of your business during the past year? How many moss-covered ideas have you relegated to the discard in the light of new experience?

Are you continuing to give the very best that you have to your work and to your associates or are you content to rest upon your oars and just drift with the current? Have you lost the spark that lights the way to greater accomplishment because of past disappointments or fears which have taken a dominant place within you, or have you rekindled your outlook upon the days ahead with the fuel of faith, purposeful endeavor, more diligent labor, and renewed enthusiasm? What does the mirror show? Do you accept it as your audit?

Convention Week Soon

THE fifty-seventh annual convention of the American Paper and Pulp Association and the twentieth annual convention of the Technical Association of the Pulp and Paper Industry will convene within the next few weeks. Both of these association meetings, as has been the custom for some years, are scheduled simultaneously. The dates of the meetings are February 18-21. The place of meeting is the Waldorf-Astoria Hotel, New York City.

Every executive and every technical man associated with the industry in any way should arrange his schedule of work, wherever it is possible, to permit attendance at these meetings. Out of them will come much food for thought and the inspiration that comes from contacts and associations with fellow humans interested in the same line of endeavor.

There has been marked improvement in the industry during the past year and probably there also have been closer personal contacts between executives guiding the destinies of their respective organizations within the industry than ever before. These contacts have brought the many executives who have made them to a fuller and better understanding of mutual problems and of problems that can be solved only through co-operative and unselfish effort. Attendance at the convention will bring such executives into even closer harmony—a situation which undoubtedly will make for a better and stronger industry.

Then, too, a program of broad appeal has been arranged for the technically minded. Some very fundamental and important subjects have been gleaned from the mill and the laboratory. A number of specific subjects will be presented in the form of several symposia. Such a means for scheduling the papers should permit of a more complete and better understanding of technical progress.

The tenor of both meetings ought to breed confidence in and enthusiasm for the pulp and paper manufacturing industry. Arrange to attend if you have not already done so.

Dividends In Safety

HAVE you ever thought of the progress that has been made by the safety movement in the pulp and paper industry?

Not so many years ago it was looked upon with ridicule by some employers and employees alike. The entire movement in the minds of such individuals was a joke. The business of making pulp and paper to them was a hazardous one and one in which accidents were bound to occur.

There were hazards all along the production line from the felling of the trees in the forests to the storage and shipment of the finished paper. These hazards were all considered as part of the day's work. Chances had to be taken and these chances held a fascination for many of the more daring.

Sometimes unnecessary chances were taken by employees simply for the thrill obtained by them. Then again orders were sometimes issued for the performance of some unusually hazardous operation with insufficient thought as to possible consequences. It is even recalled where extremely dangerous risks were taken by operating executives themselves in order to make a better showing of production.

Most pulp and paper mill executives today, however, realize that production schedules may be upset by only a minor accident. They also know that a serious accident may result in other accidents because of its psychological effect upon the rest of the working force. It has been proven that accidents are not only expensive, but most of them are preventable. By reducing the number of preventable accidents the safety movement has paid real dividends.

BETTER *quality pulp* at REDUCED cost

DURING the last few years extensive improvements have been made in the pulp mills in Europe, particularly in the cooking process. These same improvements will be made in American mills in order to increase the quality of their output and reduce costs.

There are several new cooking processes available, all of which are better than previous methods. We believe, however, that you will be interested in selecting the system which will give maximum results. In theory any system may be defended but *here are the facts!*

The Circulating System Is the Best Cooking Process

There is no cooking process known which will give as high quality pulp as forced circulation, and this increase in quality can be obtained with reduced cost.

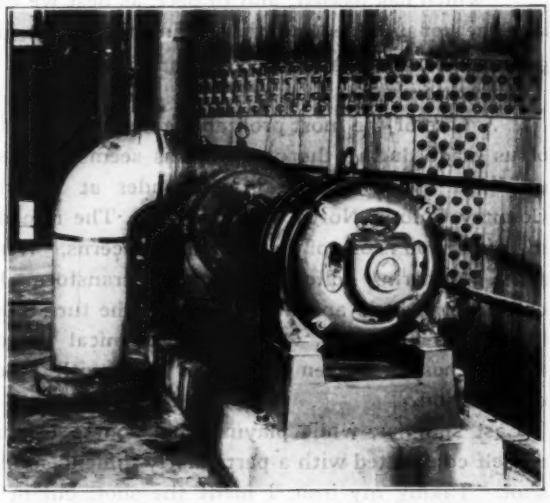
In Europe, the digesters in practically every pulp mill are equipped with forced circulation, either with or without heaters. In all, there are more than 200 circulating systems in European sulphite mills.

One mill tried out a different cooking system, but later equipped its digesters with circulating systems in order to obtain the quality of pulp required.

The F. M. P. Circulating System

On the basis of the above facts, we recommend the use of the F. M. P. Circulating System. With it, you can increase the mullen, tear and fold test qualities and improve the color of your pulp. The stock will hydrate easier and inferior species of wood can be used to make good quality pulp.

The direct savings, increased yield, saving in chemicals, reduced steam consumption and increased capacity, will pay for the system in a year in an average mill.



F. M. P. Circulating Pump—Munising Paper Co.

Insist on a Guaranteed Installation

When we contract to furnish a F. M. P. Circulating System we make the design, supply all the equipment and are responsible for its operation. It is not necessary for you to buy parts of the equipment from several different manufacturers, with no assurance that the completed installation will be 100 per cent satisfactory. Our experience in furnishing corrosion resisting steels alone will save you a great deal of trouble.

Investigate the F. M. P. Circulating System now. We will be glad to submit a complete report, without obligation to you, outlining what a circulating system will do in your mill and what it will cost.

FIBRE MAKING PROCESSES, Inc.

CHICAGO, ILLINOIS

Retrospection..... and Introspection

By WILLIAM SIBLEY

THE advent of a new year always affords our best opportunity to view, in retrospect, that which has passed; and to peer, as best we can, into the yet unfolded months, hoping thereby to find guidance for plans and direction for effort.

Retrospectively:

.... One of the most profitable gains the majority of us made during the past months seems well exemplified by Tony, the greens-tender at Exmoor Country Club in North Chicago. .... The remedying of cut sod is one of Tony's chief concerns. When some blundering golfer inadvertently transforms his club into a spade and digs a hole in the turf, Tony hurries to the spot with his mechanical devices and patches the broken expanse of green with a piece of fresh sod.

Last summer, while playing that course I found myself confronted with a particularly difficult niblick shot. Taking my iron, I made the shot, but in so doing, dug an unusually large hole in the sod. Being a bit conscience stricken over the destruction, I waited for Tony that I might apologize to him. This I started to do, by saying: "Gee, Tony—I'm sorry I . . ." But Tony would have none of my apology. Without letting me finish, Tony bared his gleaming white teeth in a genuine smile and said: "Oh nev' mind—nev' mind—Meestar Seebla. 'S-alright. . . . If you no do—I got no job!"

So it was with much of the work we had to do during 1934. There was a seemingly endless amount of jobs which were petty, insignificant, inconsequential. But none the less we realized that they were jobs to do; that they represented profitable activity. And the length plus the severity of the business slump has given most of us at least an approach to Tony's attitude of humility; his eagerness to serve; his desire for activity. Most of us recently have learned to look upon what there was to do, however petty, as being life-saver jobs. In humbleness we have looked at that mass of small, petty jobs with the full realization that "if you no do—you got no job."

This attitude of humility and eagerness is by no means the least of the things we learned during the depression. Nor will it prove to be the least important of those factors which, collectively, will lift our production and consumption back to the 100 mark.

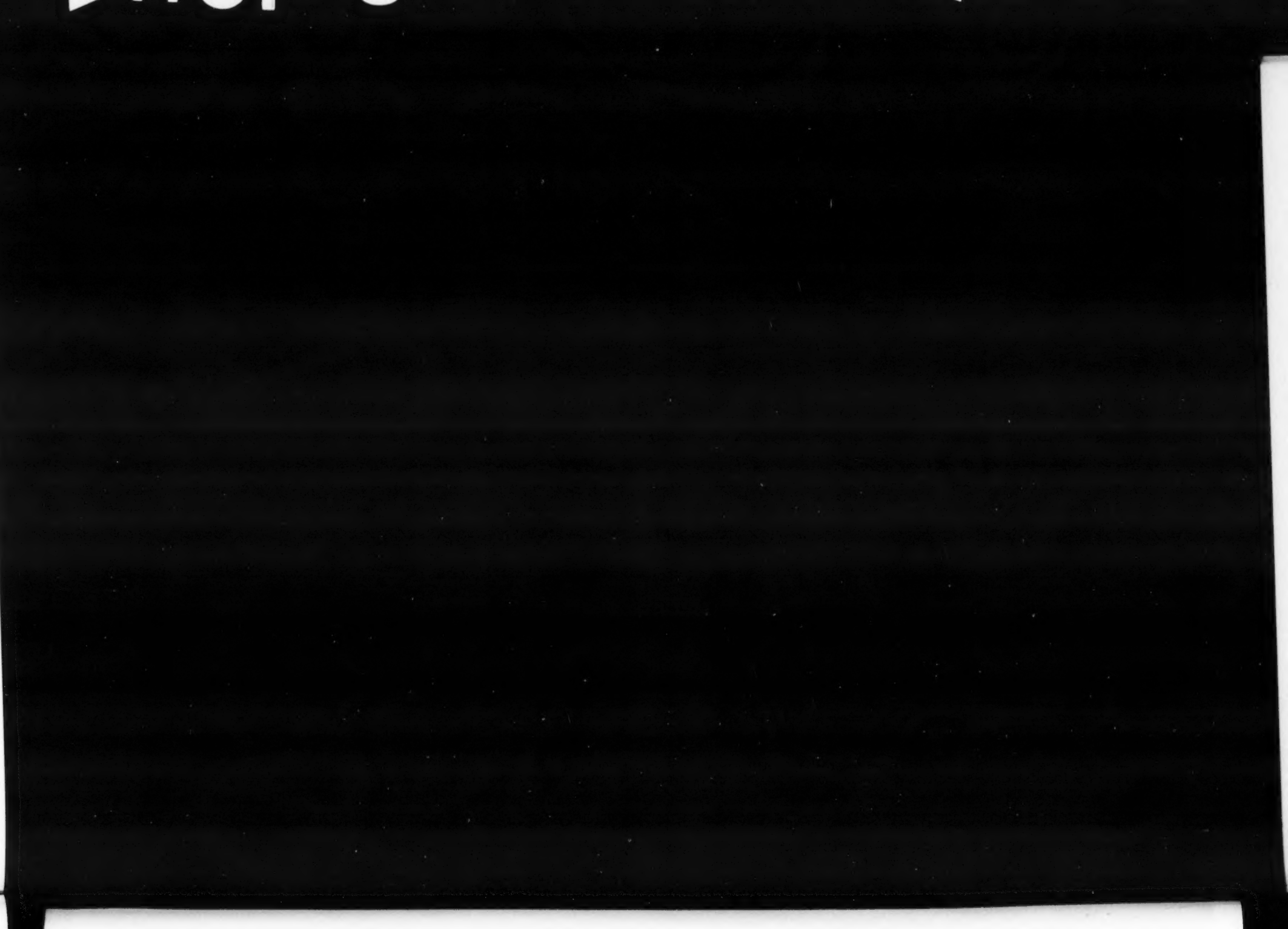
We have learned to work. We have gained a fresh appreciation of the privilege of working. We want to work. Even at the petty, insignificant, inconsequential jobs—we want to work. And this want, this mounting desire, for hard work is one of the most encouraging signs on the 1935 horizon .... because—

Introspectively:

The year 1935 will be a shirt-sleeve year. It will be a year in which we will gain prosperity only in direct proportion to the amount of constructive effort expended. It will be a year of increased production because of increased demand. But it will be a year of decreased production costs because of the economies we have learned to devise during the past four or five years. The year 1935 will be a year of activity —that activity being undertaken for immediate consumption or use. Many short-pull plans will be instituted; many immediate-return projects started. It will be no year for the starting of long-pull, or institutional plans, due to the facts that: first, we need the immediate return, and second, we have re-acquired a willingness to do little jobs. Advertising budgets, generally speaking, will show an improvement of 20 or 25 per cent over 1934. Sales quotas will be set at a correspondingly higher figure. Production plans will be laid for increased activity, although the actual fulfillment of those production plans will be predicated on the success of advertising and sales.

We are sailing into the sun. That is my belief. We may not yet have set foot upon the solid earth of Prosperity; we may not yet have reached the Golden Continent. But we are sailing in the right direction; and we have passed Shipwreck Channel; we are beyond the sea of Doubt. The Trade Winds blow in our favor. Widespread deterioration and obsolescence of productive equipment will force an upturn in the demand for durable goods. Accumulated thirst for those things which we call luxuries, plus the stored-up hunger for travel, vacations and pleasure trips will vastly increase the demand for all commodities. All of which will safely land us in Prosperous Port before the new year is out.

But remember—"1935 will be a shirt-sleeve year." It will be a year of hard work. It will be a year in which we will progress in direct proportion to the number of shirts we soil—with hard work.



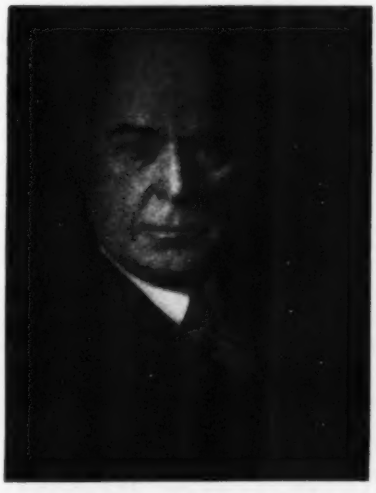
ADVERTISING PAGES REMOVED

THE PAPER INDUSTRY

A MONTHLY EDUCATIONAL JOURNAL

A Look Toward the Future

W. W. PICKARD
Paper Industries Co-ordinator



THE codes of the Paper Group have now been in effect for approximately one year. It is the almost unanimous opinion of members of the Paper Industries that the N.R.A. and the codes have worked almost a miracle in bringing the Industry from the depths of the winter of 1932-1933 to its present condition. The question present in the mind of everyone is what will happen in 1935. The National Industrial Recovery Act will expire on June 16. Will it be allowed to die? Will it be merely extended for a further period without change or will it be extended with major or minor changes? These questions cannot be answered at the present time. The most unlikely alternative, however, it that the act will be permitted to expire and the most likely is that it will be extended with modifications.

All of the codes in the Paper Group are fairly well standardized both as to form and to content. They have been described by an N.R.A. official as the only harmonized group of codes in the administration. In a general way every code in the Paper Group consists of four main parts as follows:

1—Provisions creating administrative machinery.

2—Labor provisions.

3—Provisions relating to the assembling and dissemination of statistical data.

4—Provisions relating to the manufacture, distribution and sale of the products of the Industry.

There is little or no criticism of the administrative provisions. Most thinking people, both within and without labor circles, are convinced that industry has gone to the full limit of practicability in providing increased employment under present conditions and that only with an improvement in basic conditions will the task of eliminating unemployment be accomplished.

Many industries are just coming to a realization of the value of the statistical provisions in their codes. In many such industries pre-code industry statistics were meager and unsatisfactory. It takes time to get a piece of statistical machinery into operation and to a considerable extent the results obtained have value only when they cover a sufficiently long period to make comparisons possible. The reports which members of the industries are now receiving from their Code Authorities have proved to be a liberal education to many such members.

The real battle in regard to modifications of the law and codes will be waged on the subject of provisions relating to price or what are commonly but inaccurately described as "the price fixing" provisions of the codes. There is a great deal of loose talk and loose thinking on the subject of price fixing. To the best of my knowledge there are only six codes which provide for definite price fixing. None of these six are paper codes. The other codes provide only for open price filing with some kind of a bottom price. This is usually the cost to the individual member determined in accordance with certain established costing rules themselves subject to

N.R.A. approval. In all cases such rules eliminate interest or any other form of return on capital as an element of cost. Furthermore, all such codes contain a provision permitting anyone to meet the filed price of a competitor even though such price may be below his cost.

The effect of such a provision is to make the floor price the cost to the most efficient unit in the industry. This is the only price "fixed" by these codes and it involves some mental strain to conceive of such a code provision as "price fixing" as that term is generally understood. Nevertheless the public has been given the impression that under most of the codes prices are actually fixed and at levels which assure the manufacturer a profit. This idea has been fostered by propaganda in which the large buyers have not been inactive. Political considerations have also played a part in developing the idea.

A great many codes covering a great variety of industries contain open price plans of the type described. In the earlier days of the N.R.A. they were regarded with favor and were approved without question. Since then the "price fixing" tag has been attached to them and they are now looked on with disfavor.

The issue between those who believe that there should be no price bottom which can be pre-determined by any costing formula and those who believe that manufacturers are entitled to this limited protection has been drawn and will be brought to a head even before congressional action will be possible. The National Industrial Recovery Board, which has replaced General Johnson as the administrative head of the N.R.A., has announced a hearing on January 9 on the general subject of price fixing and at the same time has announced "as its present position with respect to price fixing that in the usual case it is inconsistent with the most effective functioning of our industrial system to have in or under codes of fair competition price fixing in the form of permanent schedules of minimum prices, with or without mandatory costing systems for the purpose of establishing minimum prices." In other words the board says in effect "We have formed a very definite opinion on this subject but you may come to a hearing and try to talk it out of us if you want to try."

The only substitute offered for the present bottom limit on price is a declaration against destructive price cutting and a proposal that codes be amended so as to grant to the N.R.A. the right to declare a price destructive. No definition of a destructive price is proposed and consequently the decision in each case would rest in the discretion of the N.R.A. without rule or formula to control such decision. To most people in industry it would seem that any price which fell below the cost to the lowest cost unit was *ipso facto* destructive and that consequently the present rule for determining a price bottom was preferable to the uncertainty of a discretionary finding that a given price was destructive. The substitute might be more worthy of consideration if the machinery for determining that a price was destructive was not so ponderous and slow moving. A declaration that a price is destructive, made a month or more after the price has become effective, may have historical value but it would have the same practical value to an industry that a *post mortem* finding has to the deceased.

The National Industrial Recovery Act involves two fundamental conceptions: first, that wages and hours should be uniform and be so adjusted as to reduce unemployment and increase purchasing power and, second, that industries should be permitted to so conduct their affairs as to enable them to meet these new requirements. The attack on the price provisions in codes is due to a tendency to forget that these two conceptions are interdependant. Eventually, however, it must be realized that it is impossible to have the first without the second, and that the restoration of old competitive conditions would automatically break down the new wage structure. In the meantime, wars and rumors of wars among economic theorists may be anticipated and should be viewed with reasonable equanimity.

The industries of the Paper Group, during the past year, have made tremendous strides in organization. I doubt that there can be found any other group which has made the same advances. Industry statistics are complete and accurate and are understood and used. There is a real knowledge of demand and production and of price levels, all of which tends to induce intelligent individual action. Greatest of all is the progress which has been made in industry thought. There is a wide-spread realization that no individual can have substantial or continued success unless his industry is prosperous. This is a permanent change and nothing which may happen in the future can rob the Paper Industries of improved organization and better thinking.

Paper Winding Nomographs

D. S. DAVIS
Dale S. Davis' Associates

THE winding of paper, whether on the paper machine, supercalenders, and rewinders or in various conversion operations, presents many absorbing calculations which are of never-failing interest to operators and superintendents who will find the two accompanying alignment charts to be helpful in making them.

Both charts have their origin in the simple geometry of the circle and enable paper winding calculations to be made without recourse to a slide rule or to the drudgery of pencil and paper work, as shown in the following examples:

A roll of paper 20 inches in diameter is to be built up to a diameter of 30 inches at the expense of a 40-inch roll. What will be the final diameter of the diminishing roll? This roll bears splices at diameters of 32 and 34 inches. Will they carry over into the new roll? Following the dotted lines in Figure 1 connect 20 on the "growing" scale at the right with 40 on the "diminishing" scale at the left, noting the intersection with the central axis. Connect this point with 30 on the "growing" scale and produce the line to the "diminishing" scale where it is seen that the final diameter of the diminishing roll will be about 33¼ inches and that

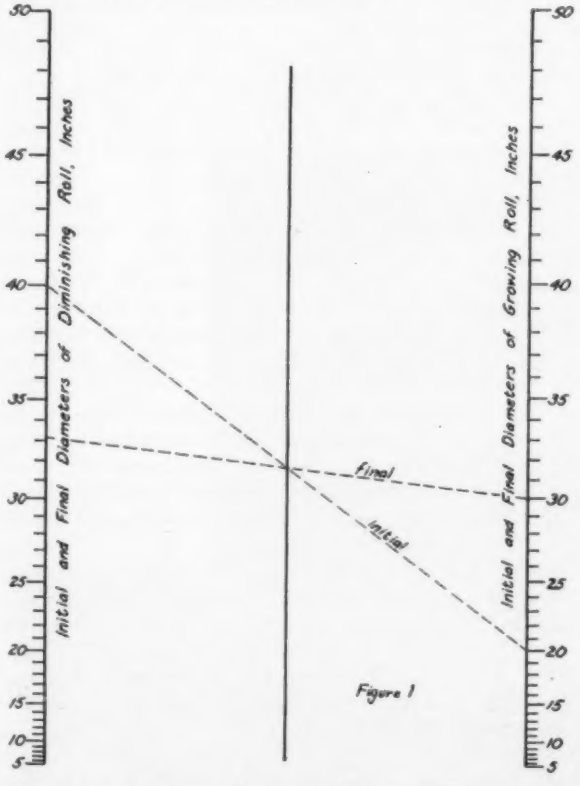
the splice at 34 inches will appear in the new roll while the other will not.

Is there enough paper on a roll 25 inches in diameter wound on a 5½-inch core to increase the diameter of another roll from 30 inches to 40 inches? Using the chart as shown below connect 30 on the "growing" scale with 25 on the "diminishing" scale and note the intersection with the central axis. Produce a line from 40 on the "growing" scale through this point and note that it would meet the "diminishing" scale considerably below the 5-inch mark, showing that there is insufficient paper available. To determine the extent to which the diameter of the growing roll could be increased, connect the intersection on the central axis just found with the core diameter, 5½ inches, on the "diminishing" scale and produce the line to the right where the final diameter of the increasing roll is seen to be about 38¾ inches.

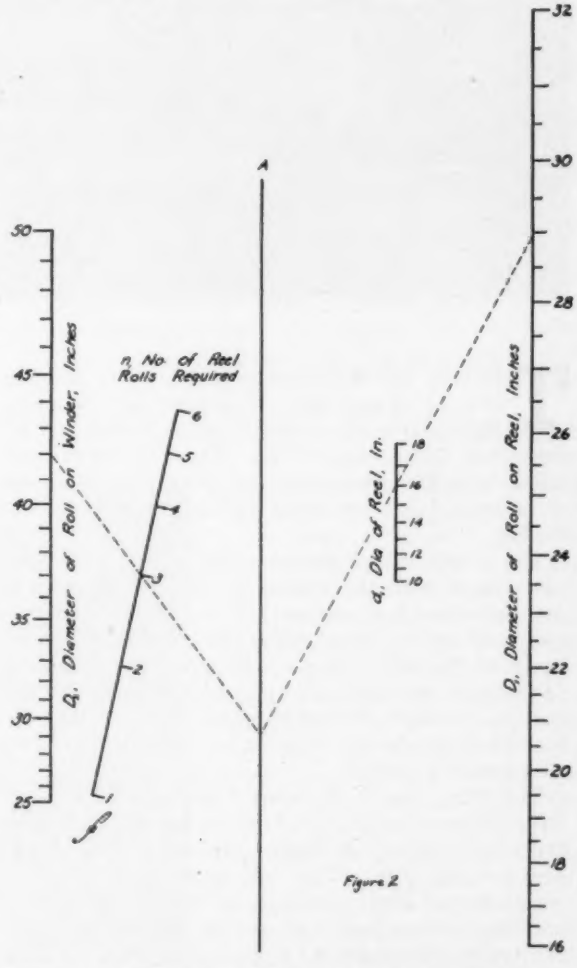
Figure 1 is based upon the relationship,

$$d_f = \sqrt{d_i^2 + D_i^2 - D_f^2}$$

where d and D represent the diameters of the diminishing and growing rolls respectively and where i and f denote initial and final conditions.


Initial and Final Diameters of Diminishing Roll, Inches
Initial and Final Diameters of Growing Roll, Inches
Final
Initial
Figure 1

In instances where a large roll on the winder is to be built up from several smaller rolls on the reel it is desirable to know how many such smaller rolls will be needed or, conversely, to know how large to make the reel rolls in order that a certain convenient number will suffice. For example: how many 30-inch reel rolls are needed to build up a 42-inch roll on the winder if the reel is 16 inches in diameter and 4½-inch winder cores are used? Using Figure 2, connect 30 on the D_1-scale with 16 on the d_1-scale and produce the line to meet the A-axis. A line from this latter intersection to 42 on the D_2-scale will cut the n-scale a little below 3, showing that nearly three such reel rolls are required. What should be the exact diameter of the reel rolls so that three will suffice? As shown by the dotted lines in Figure 2, connect 42 on the D_2-scale with 3 on the n-scale and produce the line to meet the A-axis. Connect the point so found with 16 on the d_1-scale and produce the line to meet the D_1-scale at 28.9 showing that the reel rolls need be only 28.9 inches in diameter when three full reel rolls are provided.



While the D_2-scale is built for 4½-inch cores its use in the case of cores of diameters of 3½ inches and 5½ inches results in errors of only one-tenth of an inch in the diameter of the roll on the reel when d_1 and D_2 are 14 inches and 40 inches, respectively.

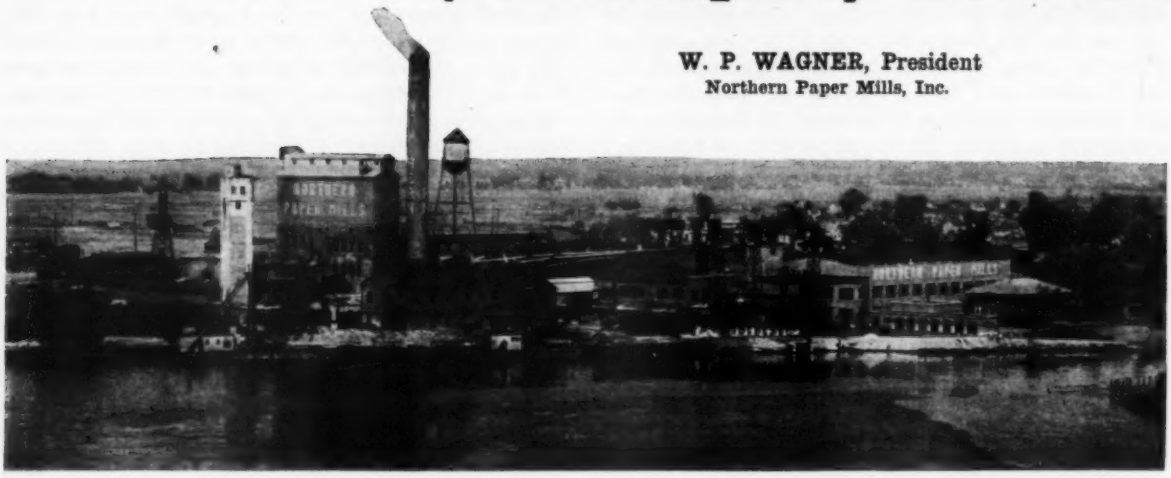
Figure 2 depends upon the relationship,

$$n = \frac{D_2^2 - 20}{D_1^2 - d_1^2}$$

where n is the number of reel rolls having diameters of D_1 inches and wound on d_1-inch reels, required to make up a winder roll D_2 inches in diameter wound on a 4½-inch core.

Building Company Spirit for Company Success

W. P. WAGNER, President
Northern Paper Mills, Inc.



THIRTY-FOUR years ago in the rapidly growing city of Green Bay, Wisconsin, the Northern Paper Mills was founded by the author and his associates. This was in 1901. The mill began operations with fifty employees and one small paper machine located in a rambling building on the shore of the bay.

The growth of the company was steady, and three years later, with the coming of John C. Fogarty as superintendent, a second machine was added. The company continued to grow and expand, and today, on the banks of the bay, occupying the same site, stands the fine modern plant of the Northern Paper Mills, employing five machines, the last of which is the largest of its kind in the world and involved an expenditure of over half a million dollars.

The plant itself is the world's largest self-contained tissue mill and includes all departments. It has its own groundwood plant and sulphite plant. It maintains its own printing plant where a competent staff turns out wrappers and labels. It makes its own wrapping paper and even grows a portion of its own pulpwood and cares for its own reforestation. The company even manufactures its own power at two power plants on the Menominee River near Stephenson, Michigan. A substantial portion of this hydroelectric power is sold to the Wisconsin-Michigan Power Company for use in Iron Mountain, Appleton and Milwaukee.

Here, then, is a company that has become one of the leaders in its chosen field; one that has risen from a small production to a daily output of over 80 tons of paper. It is true there are numerous successful industrial firms, but what does an analysis of this company's policy reveal? What outstanding factor has contributed much to its success?

The management of the Northern Paper Mills believes that the major contributing cause for its growth is *Esprit de Corps.* Without spirit, without faith and enthusiasm in and for the company on the part of each employee, the odds are heavily against success.

The making of paper specialties requires a high degree of skill. The executives of the Northern Paper Mills believe it is not enough that standards be set as to quality, softness, whiteness, etc., but that the operator himself must be so interested in his work and its results that he will not be satisfied with anything short of the maximum possible approach to perfection. The company believes further that a man cannot be developed from the top. He must be brought up through the ranks, and there is not a man in charge of a machine at the Northern Paper Mills who has had less than 15 years experience.

In 1904, at the time John C. Fogarty came to the company as superintendent, the movement of building an employee faith in the company was instituted. This policy has been maintained and every possible step is taken to assure desirable working conditions and to promote employee enthusiasm.

The management never has been interested in anything of a paternal nature. It has been the company's aim to encourage the employees to develop their own *Esprit de Corps;* to turn over to the men such problems as will make them a part of the company, either as individuals or as groups; to foster the belief that the management is interested in employee ideas, and that as the company succeeds, so will they succeed. Over and above general good treatment and high wages, this spirit is promoted by the encouragement of several internal organizations.

There is, of course, the usual hard playing base ball team—only the Northern boys play a little harder. But the spirit of the game goes deeper than this. It goes into financial help, welfare work, insurance, safety work, as well as mere social contact.

The several internal organizations encouraged by the company involve, besides the usual athletic teams, a

credit union, a welfare club including an insurance plan, and a safety committee. The plant personnel is given absolutely free rein in the running of these organizations, and every possible effort is made to induce employees to feel that the organizations are entirely their own, without being hindered or influenced by the plant management.

In an organization of this size, there is a minimum of changing personnel. The company has at present some 560 employees. Of this number, there are, of course, some that have outside arrangements for future care, financial aid, insurance, etc. New employees particularly are slow to commit themselves financially or enter into any plan. Then there are some that just don't "believe" or who feel they need the money at home, or feel they have some other good reason for not affiliating with such a movement. But it is interesting to note that of the entire employee personnel, almost 500 are members of some one of the plant organizations.

The Credit Union has a membership of 200 and is growing steadily. Membership is entirely voluntary. This union operates under the State banking laws and is controlled by the State Banking Department.

A company member can pay monthly into the Credit Union Fund any amount he feels able. As long as he is a member, his money earns interest, and he and his fellow members can borrow any amount from the fund and pay it back in installments at the rate of one per cent interest a month on the unpaid balance. In two years the fund now amounts to more than $3,600 and has been turned over three times.

Perhaps the most interesting of the company organizations and the one that provides the most benefit, is the Welfare Safety Club. This organization is based on an excellent plan developed by an association — a concern that has specialized in welfare insurance. This association is a legal reserve and mutual type of company under the laws of the State of Illinois.

As a mutual type of company it pays a dividend to its members, and as a legal reserve company, its integrity can hardly be questioned.

The plan involves no expense whatever to the Northern Paper Mills. Briefly, it is as follows:

(1) The formation of a Welfare Club by the association.

(2) The installation of an insurance plan by the association that provides an accidental death benefit and monthly cash benefits when disabled by illness or accident.

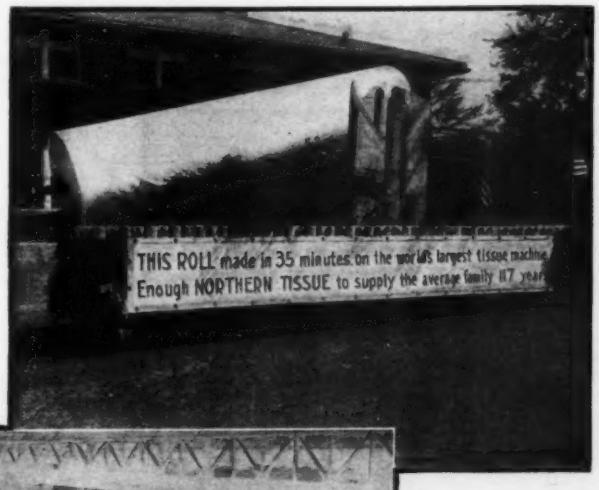
It was felt that the Welfare Club fitted into the Northern Paper Mills' plan of building *Esprit de Corps,* and accordingly it was adopted three years ago. With the permission of the plant executives, the association club organizers outlined the Welfare Club plan before the key men in the plant. The idea appealed to them and the club was organized with 395 members. This was gradually built up to 496 members.

The men elect their own officers with no interference from or influence by the management. However, most of the company executives are members.

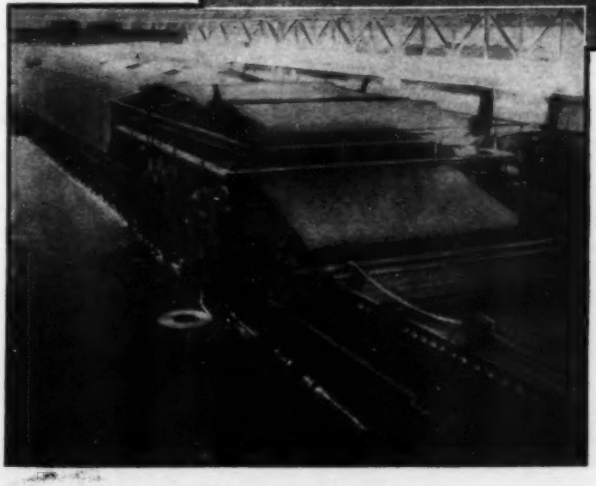
The first policy issued cost each member 90 cents a month. Of this amount 17 cents was retained by the Welfare Club as an emergency fund. However, this policy did not pay illness benefits until after the eighth day of disability. The employees did not feel this was soon enough, so the original policy was changed to one which paid sick benefits after the fourth day of illness. This policy called for a slightly higher rate of 96 cents. It was agreed that the local club would make monthly payments of one dollar, of which 14 cents per member would be retained in the club treasury.

The officers of the club are: president, vice president, treasurer and secretary. There is also a board of seven trustees, one from each department of the mill, including the office. The officers are elected for one year, and the trustees for two years. The club holds meetings at regular periods, with special meetings called by the president or by no less than five per cent of the members.

All of the officers of the club are chosen from the plant personnel. President Otto Rachels, who is a


THIS ROLL made in 35 minutes on the world's largest tissue machine
Enough NORTHERN TISSUE to supply the average family 17 years

Roll of tissue from the largest tissue machine in the world



The largest tissue machine in the world

Otto Rachels, Woodyard Foreman and president of the Welfare Club of the Northern Paper Mills

woodyard foreman, is now closing his third term of sincere, successful and intelligent management. Miss Pearl L. Burgess, plant nurse at Northern Paper Mills, is secretary of the club.

The Welfare Club has many opportunities to do good. The treasury, with few exceptions, is drawn upon for welfare work. There has been some social entertainment and in many cases even that has been promoted solely for the purpose of adding to the treasury for welfare work. One year a masquerade was given at 25 cents admission. Another time it was a card party on the same basis. These two netted over $100, all of which went into the treasury for the aid of members in need.

The only purely social events are the annual picnic for everyone and the Christmas party for club members. At the picnic there is a parade in which all take part with floats of original design. The mill generally *takes* the town. At the Christmas party, Santa Claus delights the children; there is dancing and refreshments for all.

Club expenditures are determined by the Board of Trustees. Expenditures are based on the amount of time an employee puts in at the plant, the oldest and full time employees receiving the most consideration. The money is used for many things that in the past had to be financed by taking a collection through the plant. It pays for Christmas baskets, flowers for funerals, expenses in excess of policy returns and many other calls for aid that are bound to come from so large a group of people.

Never has the club acted in any way except for the best interests of the plant and its personnel. The spirit of the entire Northern organization is all that could be asked for, and this spirit is, in a large measure, the result of the confidence in the future that the welfare plan has helped to build. Nor has the trust of the management been violated in any way. Of their own volition, the following paragraph was written into the Welfare Club Constitution.

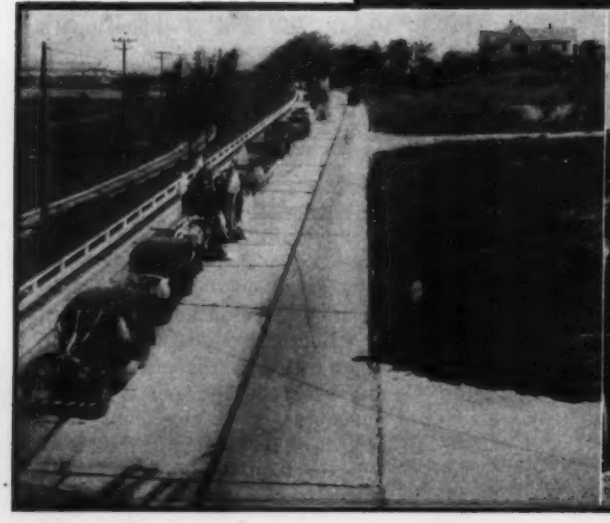
Under By-Laws, Sec. 5: "Subjects pertaining to Political, Sectarian or Labor Organizations shall not be discussed at any of the meetings either by the Board of Trustees or membership in assembly."

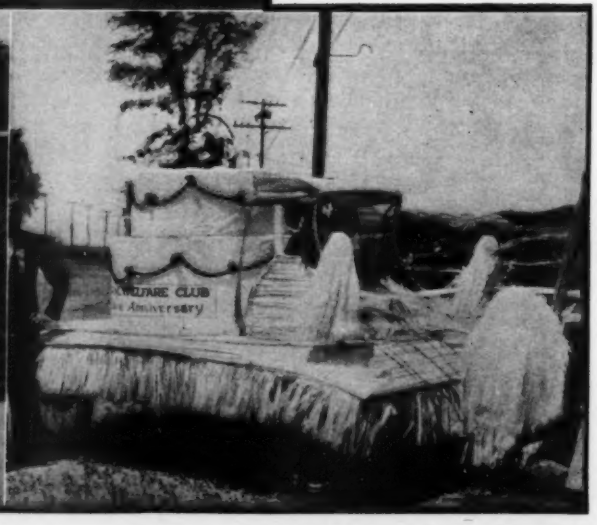
The association also conducts a safety campaign consisting of a monthly bulletin, an electric flash sign and safety literature in the form of pamphlets and posters.

Left—Northern Ball Team in Action

Below—Parade of cars on Picnic Day

Below—A Welfare Club Float





The Northern Welfare Club receives 250 copies of the monthly bulletin, which are placed where members can get them and read them. Safety posters are placed in the hands of the Safety Committee and distributed around the plant.

And now to consider another step in the development of plant personnel. This is the placing of safety measures in the hands of a Safety Committee of shop men. There is a safety engineer who works independently of the plant committee and checks committee suggestions. This committee consists of fourteen men—a man from each crew. The understanding is that the management will take seriously anything that the committee takes seriously. When the committee meets, it takes as long as is necessary for the discussion of the subjects at hand and every possible step is taken to carry out the suggestions of the men.

When the accident percentage increases, it is not reduced by pressure from the foreman, but rather through the study of the cause by the men themselves. Such results are obtained only through intensive safety training and constant vigilance on the part of all employees for the safety of each other. This is best illustrated by the following anecdote.

Once when the accident rate had jumped mysteriously with the taking on of 75 new men, the Safety Committee was inspecting the plant. In the course of its rounds, it came upon an old employee chipping concrete for the purpose of some alterations. The man wore no goggles in spite of the fact that he had been provided with the best goggles obtainable, and the concrete chips were flying about his head. The Committee formed a circle around the man and watched him silently. After a few moments the tapping of the hammer ceased and the workman looked at those around him.

"Say," he said gruffly, "what's the matter with you guys?"

"Nothing's the matter with us, but what's the matter with you. Where are your goggles? It's guys like you that are keepin' the accident rate up and keepin' us wandering around trying to find out what's the matter."

The stone chipper was literally shamed into getting his goggles by an incident he never forgot, and the incident, trivial though it may have been, was known and discussed by everyone throughout the plant.

Lessons such as this are worth bales of safety posters and reams of pamphlets. They carry the interest in safety right to the men, making it their job to maintain safety.

Northern Paper Mills chooses its employes with great care. The hiring is done by the personnel department which has demonstrated its ability to pick quality so well that it is almost impossible to keep a girl on the job more than four years. Somebody in the plant marries her.

The experience of the company has now extended over a long enough period of time to convince the management of the success of its policies. This success is reflected not only by success as a manufacturing concern and a fine spirit of good will and co-operation throughout the organization, but in the reduction of plant accidents, in the lack of reserve with which labor reports for treatment even minor accidents and illnesses to the plant nurse, and in the desire of local labor to work for Northern. This desire is apparent through the fact that the company has nearly 25 per cent more applications for work than either the State or Federal employment offices at Green Bay. When the morale of a company's personnel is built up and maintained, the way to success is easy.

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Precise Measurement of Air Permeability

A sensitive instrument has been developed by F. T. Carson at the National Bureau of Standards for measuring the rate at which air passes through paper and other porous materials in sheet form. The air permeability of paper is significant in a great many ways. Sheathing paper used in the walls of houses should be air-tight to minimize heat losses from air infiltration. A well closed structure, not too permeable to air, is desired in cigarette paper to insure good draft through the burning tobacco. The dielectric strength of paper used in insulating electric cables is closely related to the air permeability. Certain types of bag paper require a fairly definite air permeability, since the process of filling the bags demands that the paper act as a filter to retain powdered material as the air escapes through the paper. The air permeability test is sometimes used to predict the rate of absorption of the saturant in the preparation of such materials as roofing felt, paraffined paper, sheathing paper, bakelite, and cable paper, since both properties depend upon the porosity of the untreated sheet. For the same reason air permeability is related to the rate of drying of printing ink on printing papers.

A preliminary survey indicated that the most common sources of error in existing instruments for testing the air permeability of paper are leakage, especially at the edges of the specimen, fluctuations in driving pressure, lack of sensitivity, and restricted range. The new instrument contains a permeability cell of novel design, in which an annular cell surrounds the inner testing cell. The air flow is so regulated that there is no lateral pressure gradient at the boundary of the inner cell, and hence no leakage into or out of it. The pressure regulator is a form of automatic diaphragm valve designed to maintain a very steady pressure drop across the instrument. The amount of air, which in a given time reaches the inner cell by flowing through the specimen under the influence of this constant pressure difference, is measured with a capillary flow meter containing four carefully calibrated capillary tubes. Results are reproducible on an identical area to within a few tenths of one per cent. The range of the instrument is about a thousand times that of most other instruments available for the purpose. It will accommodate materials of any thickness up to half an inch, and it is not necessary to cut them in order to make the test. Tests can be made rapidly, since the element of time is taken care of in the calibration and the duration of the test need not be measured. The test area is larger than is usually found in air permeability instruments in order better to sample the material.

POWER LOSSES REDUCED

Through Sectional Drive

F. W. PARSONS[1] and A. M. COOPER[2]

CONFRONTED with the problem of increased production and higher paper speeds, The Glassine Paper Company of West Conshohocken, Pa., recently replaced its mechanical drive with electric sectional drive. The selection of the electric drive was made only after a careful analysis of initial investment, operating costs, reliability and performance.

It would have been possible to install new gear units and clutches to be driven by the existing variable speed line shaft, but the problem would not have been solved completely by such an installation.

The machine floor was cramped for space. The old cone pulleys with their gears and clutches took up all of the space between the back of the machine and the wall and thus made it impossible for a man to walk from the wet end to the dry end between the machine and the wall. Somewhat the same situation existed in the basement where the variable speed lineshaft took up valuable space which could be used to better advantage for other purposes.

The variable speed lineshaft was driven from a steam engine by a long belt that ran the entire width of the basement. While these conditions were recognized to be undesirable, the steam engine supplied all of the steam required for drying the paper produced on the machine. To put in an electric drive that would use a motor as its driving power, would upset the almost perfect heat balance that existed.

The adaptability of the sectional electric drive lent itself to these conditions admirably. The direct current required for the section motors could be supplied by a generator which could be chain driven from the existing steam engine. That would eliminate the long belt without upsetting the heat balance as the steam from the engine still could be used to dry the paper.

Since there is no lineshafting of any kind involved with the electric drive, the entire space occupied by the old lineshaft could be released for other service. Likewise, the section driving units not being mechanically connected to the basement and having no cone pulleys and clutches to occupy space, would clear up the space back of the machine.

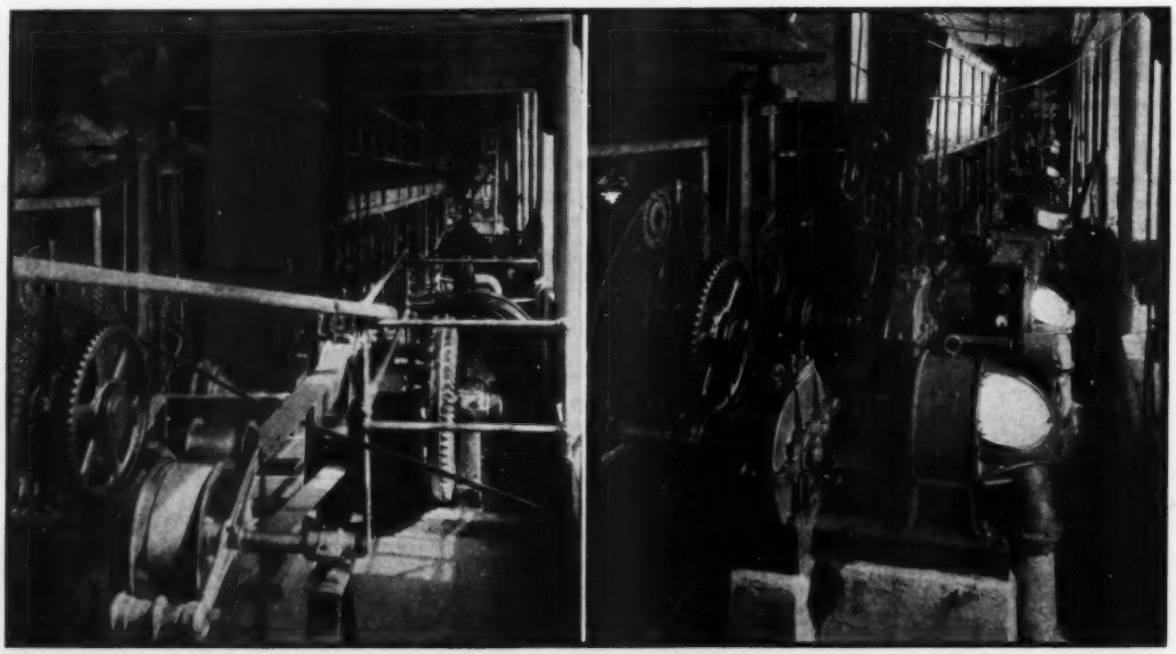
With these conditions in mind, the latest type of sectional drive with carbon pile section regulators for automatic and instantaneous regulation between sections and with provision for adjusting the draw between sections from the front of the machine were installed. The starting generator system of control was used. In this system, power for starting is taken from a separate starting generator. The starting generator furnishes power at a low voltage for starting, inching and accelerating. Low voltage starting reduces the power peak, provides smooth, positive slow speed operation and assures safe uniform starting. The starting generator system provides ideal conditions on starting, inching, working with each section of the machine, changing grades, etc. It permits operation at the low speed for an unlimited time—an advantage when cleaning up the machine, changing wires, and when changing or repairing felts on wet end or dryers.

The generator was especially designed so that it could be coupled to a synchronous motor as a prime mover in case conditions change and the steam engine is no longer a factor in the heat balance of the mill.

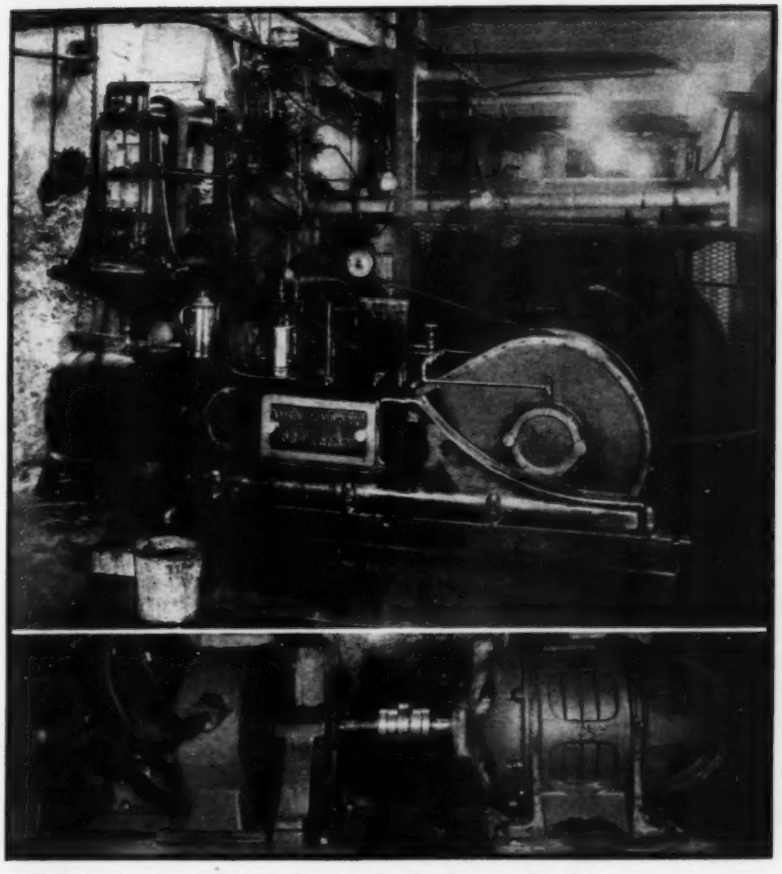
The installation of the drive was completed with a minimum shut-down. Then the drive was started up and the sheet run across the various sections as fast as the couplings could be connected. It is interesting to note that a perfect sheet was wound up on the reel even before the section regulators were adjusted.

Shortly after the drive was in operation, the steam engine failed. The foresight in designing the generator for possible future operation by a synchro-

[1]Consulting Engineer, Haverford, Pa.
[2]Industrial Div., Westinghouse Elec. & Mfg. Co., Philadelphia, Pa.



Before and after installing sectionalized electric drive. Note how electric drive has contributed to neater and cleaner machine room.



Prime mover for electric drive may be either steam engine or synchronous motor

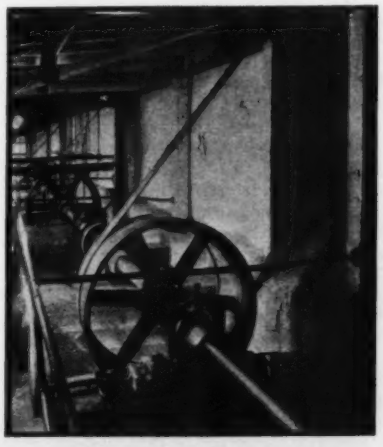
nous motor was rewarded by making it possible, in the emergency, to replace the engine by a motor and continue operation with very little lost time.

The new driving units, citing the advantages of the sectional electric drive, have eliminated the personal and fire hazard formerly present and have contributed to a much neater and cleaner machine room. The space formerly occupied by the lineshaft is going to be used for a much needed driveway along the side of the building to the shipping room. The belt which formerly bisected the basement is gone.

Due to the even start and smooth acceleration of the couch section, the sudden jerks and slipping of the wire have been eliminated that there has been a definite increase in wire life. In fact, the life of each wire, since the new drive was installed, has been double that obtained with the old mechanical drive.

In addition, material savings have resulted from the use of less oil and attendant labor costs, since the only mechanical transmissions in the sectional drive are highly efficient enclosed gear units which are lubricated from within oil-tight cases.

At the same time, maintenance costs have been reduced by the elimination of mechanically operated clutches, belts and cone pulleys, gears and lineshafts with unsealed bearings. This has resulted in a corresponding saving in power. On a test run over a period of twenty-four hours, for example, the sectional drive required a total of 72 horsepower including all exciter, master set and blower load, as compared with 120 horsepower required with the old drive on the same weight of paper and at the same speed. It is interesting to note that during this test run a total of 61.3 miles of paper were made in one continuous sheet without a break of any kind.



The old lineshaft which has been eliminated and space made available for other purposes

Greater reliability, accurate speed control, greater flexibility and reduced lost production are other important features which have become evident since the installation. These advantages, coupled with the advantages previously enumerated, are the results of years of engineering research and development.

◆ ◆

◆ 1934 Review of Cellulose Products Developments

Important among developments during the past year has been the continued research at the Hercules Powder Company's Experiment Station in Wilmington to make even better nitrocellulose and to investigate new applications for it. Nitrocellulose is the chief product manufactured by the Cellulose Products Department of the Hercules Company. During 1934 the various types of viscosities were made to the most exacting limits of uniformity ever attained by this company.

Among the new developments, the application of lacquers to paper and cartons received unusual attention. Nitrocellulose lacquer is finding increased use in the general packaging field.

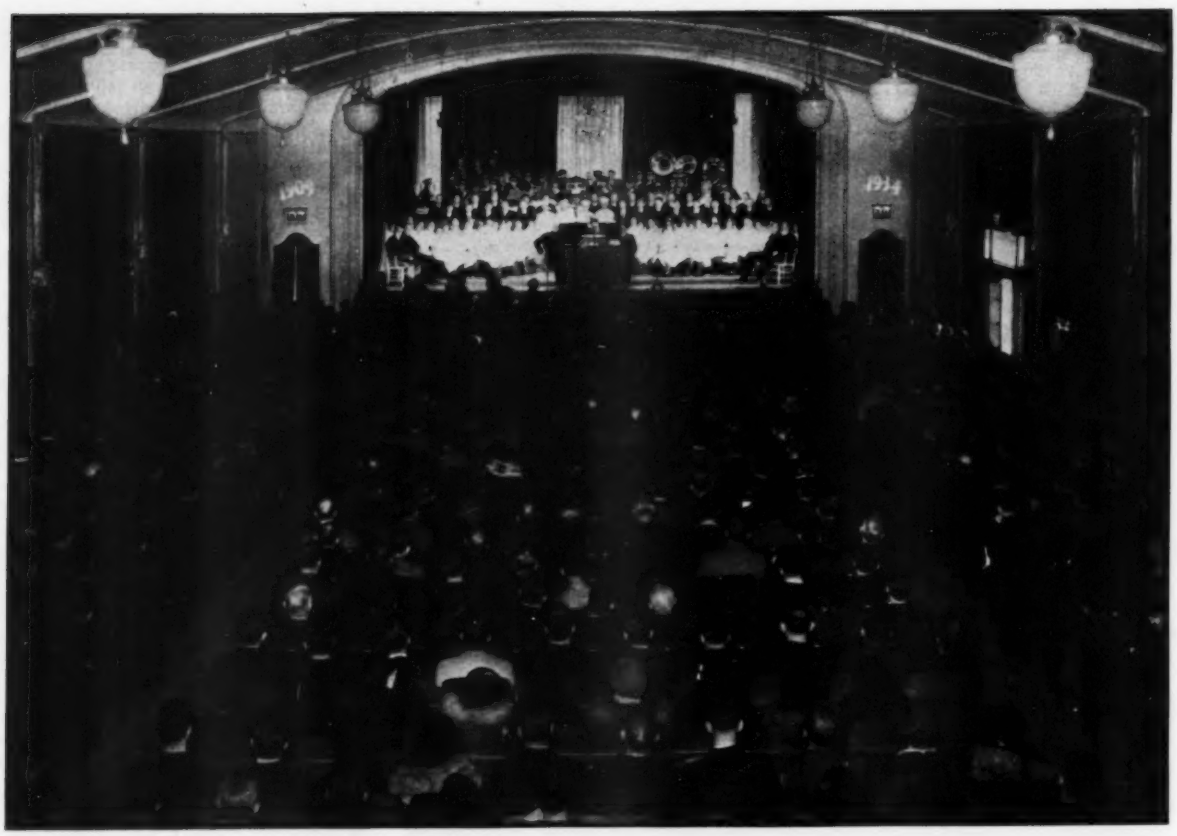
The year 1934 marked the evolution of Tornesit from an experimental to a commercial product. Tornesit is a chlorinated rubber base, from which can be formulated paints, emulsions, binders, adhesives, and plastics, with remarkable chemical resistance.

Hercules chemists consider it one of the most important new materials in the protective-coating industry since the discovery of nitrocellulose as a base for lacquers. Hercules' new plant for the manufacture of Tornesit in this country is nearing completion at Parlin, New Jersey.

The Hercules-made product will offer refinements in even greater uniformity, more rapid rate of solution, lighter color, and less residue than the imported product.

Tornesit has demonstrated its great resistance to acids, alkalies, and the many other corrosive elements that are destructive to protective coatings. As a base for paints to be used where corrosive elements must be combatted, Tornesit has an important use. However, indications are that it will be employed in many industries and for many more purposes than that of a specialty paint material.

◆ AS A FURTHER step in the recent merger of the Structural Gypsum Corporation, American Powder Company, The Selden Company, and other former independent subsidiaries into the American Cyanamid & Chemical Corporation, Arthur J. Campbell has been appointed assistant general sales manager of the corporation. This step will serve to consolidate the activities of the newly created Divisions of the corporation. Mr. Campbell at the same time will continue his duties as general manager of the Structural Gypsum Division.



K. V. P. Broadcasts Twenty-fifth Christmas Service

CHRISTMAS time at Kalamazoo Vegetable Parchment Company, Parchment, Michigan, is always a joyous occasion, but the recent Christmas festivities held special significance—it was the company's silver anniversary. In honor of the occasion, unusual preparations were made for the Christmas service, which, during the years of the company's existence, has become a tradition, and is annually attended by all of the men and women connected with the company.

A particularly interesting feature of the arrangement was the broadcasting of the regular service over a national hook-up. There were Christmas selections by the KVP chorus and male quartette, also musical selections by the Parchment Band. Paul Rader, well known Chicago preacher, was the guest speaker.

In previous years, it has been the custom to give each employee of the company a large basket filled with groceries and foodstuffs. This year each employee received five silver dollars. Those attaining ten-year employment received special recognition and were presented with gold pins at a dinner, which was attended by all employees having been with the company ten years or longer.

Twenty-five years ago, Jacob Kindleberger had a vision of the large and progressive paper mill of which he is president and during those years he has worked untiringly and built up this vast enterprise by faith and courage. His opening address at the Christmas service outlined clearly and effectively the principles upon which the growth of the company has been founded and the spirit of true fellowship that exists between the management and employees of this well known and successful company. Mr. Kindleberger's address is quoted herewith:

"Perhaps you are wondering what this is all about—who is this crowd singing so beautifully, where are they from, and why are they doing it?

"We have only a few minutes to tell you what it is all about. First, this is the KVP Christmas Party consisting of about 1,500 men and women, employees of the mills, the office, management, directors and close friends of the company. The place is Parchment, Michigan, Kalamazoo County. The building where this meeting is held is the Parchment Community House.

"Celebrating Christmas with a service, always deeply spiritual, is a custom dating back twenty-five years to the beginning of our Company. The Parchment Chorus, consisting of 125 voices, the Parchment Band of 50 pieces, directed by Don McDowell, furnish the special music. The rest of us join in singing the hymns. The whole program is rendered by home talent with the exception of the speaker of the day. The speaker of the day is always a preacher of note. No, I am not he. I am only 'Uncle Jake' who, like the poor, the company has had with it from the beginning.

"KVP, you know, stands for Kalamazoo Vegetable Parchment. The little town of Parchment surrounds the industry. It received its name from the company's abbreviated name 'Parchment.' We are located about 2½ miles north of the City of Kalamazoo. The little town of Parchment is incorporated., It is economically managed and modern in every respect. We have about all the conveniences every city has with the exception that we have no jails, no poorhouses, no post office — mail comes through Kalamazoo.

"We do have a large Union Church and Sunday school, second to none in the State of Michigan. This auditorium is filled every Sunday by grown-ups and children from the Village of Parchment and also from the outlying districts. In the Parchment Church and Sunday school, every man's creed or belief is respected and the life and the teachings of the Saviour of the World are here taught and emphasized.

"We are also proud of our twelve-room modern schoolhouse which is well rated.

"Our Community House serves our

people spiritually, mentally, physically and socially. Our new gymnasium, attached to this building, has just been completed. We have a health department, ably conducted by a graduate of the Battle Creek Sanitarium. We believe in the old maxim that an ounce of prevention is worth a pound of cure—keep folks well if you wish them to be happy and useful to themselves and to others.

"Parchment also has a beautiful park with a fine ball diamond, tennis and horseshoe courts, children's playgrounds, ice skating and coasting in the wintertime. The ball diamond and these courts are located in a natural basin surrounded by hills. This bowl is used both summer and winter for various entertainments. In the warm summer evenings, the Parchment Band and Chorus put on concerts and dramatics, and on Sunday nights sacred concerts are held by the same band and chorus that you will hear on this program today.

"The management of the company joins heartily with the employees in all these activities. When you hear, as you do now and then by soap-box orators, that industry has no soul, send them up to Parchment, Michigan. What they see and hear will convince them that they have been sadly misinformed. The KVP Industry, and we believe most industries in America, are vitally interested in the welfare of its employees.

"Yes, the executives, superintendents and foremen live here at Parchment. You will find them sitting side by side in the church, in the Sunday school, in the educational classes and at social functions. Class distinction does not exist here. It is a beautiful picture of true American democracy. Why should it be otherwise? We do sing with feeling and sincerity that old hymn 'Blest be the tie that binds our hearts in christian love.'

"The policy of the company has always been, is now and I hope ever shall be—pay in wages as much as you can, deal justly with men, practice the golden rule, and men in turn will do likewise unto their employers.

"The success of this company is due largely to the high grade men and women working with us. Also, to a wise board of directors, to the efficiency and enthusiasm of our associates in the management. The whole organization keeps but one objective in view. No, you are wrong. It is not to excel in money making—it is not an ambition to have the largest paper mill in the world. Here it is: It is to have the KVP Company known as a dependable and efficient organization, to be called by you 'A good and faithful servant,' to please you with our products and please you with our manner of doing business.

"Friends, there is a tremendous unspeakable joy that does come to one when he is conscious of the fact that he is serving his fellow-man satisfactorily. The paper we make here is known as food protection paper; Vegetable Parchment paper, used for the protection of dairy products and meats; waxed paper that protects your bread and cereals from deterioration; also special papers, waterproofed, for wrapping fresh meats.

"In our mill No. 2, fine papers are made for writing purposes, letter heads, billheads and school papers. This line is well spoken of. They carry man's messages of hope and love to the ends of the earth with courtesy and dignity.

"This company is also known as a pioneer in manufacturing paper for household use, paper for cleaning, dusting and polishing, paper for cooking vegetables and fish, paper for lining shelves, paper for washing dishes, paper for whitening and polishing teeth, and others too numerous to mention here. All these items, known as Handy Home Helpers have made housekeeping a real delight for the American home maker.

"Visitors to our mill speak in the highest terms of our mills and the caliber and the character of our employees. They are clean mentally, morally and physically.

"You know, good products are made by good men and women. Good men and women are developed in a spiritual atmosphere. A spiritual atmosphere produces happiness and prosperity.

"This whole happy group of Parchment folks join me in extending to you friends on the air sincere best wishes for a Joyful Christmas and a Happy and Prosperous New Year, with a prayer in my heart that the influence of the life and the teachings of the Great Master will make us more kind, more sympathetic, more tolerant and more patient to each other. And may it be said about us as it was said about Him, 'He went about doing good.'

"Now again you will have the privilege of listening to the Parchment Chorus singing The Shepherd's Story."

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These Men Have Spent Twenty-Five Years at KVP

Left to right—Front row: Earl Boldman, Jacob Kindleberger, Charles Conrad. Second row: George Martin, Henry Butler

◆ Stoker Manufacturers Elect Officers

J. R. Whitehead, manager, stoker and research divisions, Fairbanks, Morse & Co., Chicago, was elected president of the Stoker Manufacturers Association at the annual meeting held in Cleveland, Ohio, on December 10. He succeeds W. H. Rea, president, Detroit Stoker Co., Detroit, who has served since the last annual meeting held in June, 1933. R. B. McClave, president, McClave-Brooks Company, Scranton, Pa., was elected vice-president, succeeding Mr. Whitehead. Harry H. Kurtz, Iron Fireman Manufacturing Co., Chicago, was re-elected treasurer and Marc G. Bluth, Chicago, was re-elected secretary.

Important problems facing the industry were thoroughly discussed in an all-day session and at the annual dinner in the evening the members listened to an interesting talk on Fair Trade Practices by W. C. Connolly, a prominent high-pressure boiler manufacturer and a pioneer in the development of ethical trade practices in that industry. Other remarks were made by T. A. Marsh, Iron Fireman Manufacturing Co., and by the new and retiring presidents.

H. H. Kurtz was continued as the official representative of the association on the Committee of Ten and the organization unanimously voted to contribute a substantial sum to help support the committee's activities during 1935.

◆ Beaver Pipe Tools, Inc. New Name of Borden Co.

The name of the Borden Company, Warren, Ohio, has been changed to Beaver Pipe Tools, Inc. This change is in the corporate name only, and is designed to identify the name of the company with that of its product. Another advantage is that in the company's district offices in various cities, confusion of mail between it and The Borden Company, distributor of dairy products, has been very annoying.

The company is now entering upon its thirty-fifth year.

World's Largest Winder Built by Cameron Machine Company

Paper manufacturers especially will be interested in the news that the world's largest and fastest winder has been built, tested and shipped to Edward Lloyd Limited, Sittingbourne, Kent, England.

This huge modern winder was built in Canada at the plant of the Cameron Machine Company of Canada, Limited, a subsidiary of the Cameron Machine Company of Brooklyn, New York. The preferential tariff rates between Canada and England made it advisable to build the machine in Canada instead of at the shops of the parent company in the United States.

The new high speed newsprint machine, the largest in the world, now being built for Edward Lloyd Limited, will have a wire width of 320 in. and will run at 1,400 f. p. m. As the paper machine runs continuously from week end to week end, producing a continuous web at the speed mentioned, it is essential that the winder, which trims the edges of this wide sheet, slits it and winds it into rolls for delivery to newspaper pressrooms, should run at speeds much in excess of the papermaking machine in order to rewind all the paper made and still have sufficient time for rest periods during which rolls are changed.

This super winder, is therefore designed to run at speeds up to 3,000 f. p. m. It is not always necessary to utilize this high speed, however, as time and labor saving features for setting cutters and changing shafts, make roll changing a comparatively simple matter. In any case, this machine is capable of keeping well ahead of the paper machine at any paper making speed, slitting and winding the on-coming web at speeds not much short of 35 miles per hour.

The machine weighs approximately 80,000 lb. The finished rolls of paper rewound on it, weigh approximately 10,000 lb. This winder embodies improvements that were just idle dreams a short decade ago. It is as far in advance over the old time conception of a winder as the radio over the moccasin telegraph. Especially constructed and dynamically balanced steel drums, cutter roll and riding roll, permit this heretofore unheard of speed.

The patented drum grooving produces a firm hard roll of evenly wound paper, and the Cameron system of cutting against a cutter roll, close to the point of winding insures smooth, straight roll edges. The current conception of winding a hard roll is to employ more brake effort on the mill or parent roll, tending to place undue strain on the paper, which is afterward rewound into a finished roll. That is not so with this winder. The density of the finished roll is governed by the regulation of pressure on the riding or pressure roller and on the wind shaft bearings, coupled with exact predetermined ratios of drum and roller speed, so that the mill roll tension is employed to govern the sheet entering the winder and very little of it is passed on to the rewound roll.

A machine of such width and speed to meet the exacting demands for the high class rolls required by Edward Lloyd Limited, must be built of the highest grade of alloy steel and other materials. The world has been combed to find the best material for each specific part.

It is a matter of considerable pride to the builders that the order for this super machine was placed, after the purchaser's experience with the performance of four other machines of the same make, ranging from 163 to 254 inches in width.

◆ P. I. A. Approves Resolution to Terminate Executive Order

The resolution following was approved and adopted by the Paper Industry Authority at its meeting December 14, requesting the President to terminate the effectiveness of Executive Order No. 6767 with respect to the Paper and Pulp Industry.

Resolution

WHEREAS, By Executive Order 6767, dated June 29, 1934, it was ordered that bids to agencies or instrumentalities of the United States or any State or Municipality by members of Industries in which Codes of Fair Competition require the filing of prices, might be made at a price not more than 15 per cent below the price filed by the bidder pursuant to the provisions of said Code, and

WHEREAS, The Paper and Pulp Industry is duly organized and functioning under a Code of Fair Competition duly approved, pursuant to the National Industrial Recovery Act, and

WHEREAS, The members of said Industry sell a substantial amount of paper and paper products to the United States and to States and Municipalities, and

WHEREAS, The Paper Industry Authority, the duly constituted agency for the administration of said Code, believes that the filing of price schedules pursuant to the terms of said Code is a desirable and necessary means of effectuating the object and policy of the National Industrial Recovery Act, and

WHEREAS, It has developed that by the aforesaid Executive Order, Federal, State and Municipal Agencies and Instrumentalities are placed in a favored and preferred position as opposed to business and industry generally and are thereby enabled to encourage destructive price cutting and unfair competition, and

WHEREAS, The said Paper Industry Authority believes that it is the policy of the National Industrial Recovery Act that uneconomic and destructive price cutting is not in the public interest, and

WHEREAS, There is no sound economic distinction to be made between purchases by Federal, State and Municipal Agencies and Instrumentalities, and those made by private business, and

WHEREAS, The said Executive Order has tended to cause and has caused demoralization in many markets for paper and paper products, thereby endangering the maintenance of the provisions of said Code, especially the provisions relating to maximum hours and minimum wages, and

WHEREAS, Reductions of the said 15 per cent tolerance, even though made promptly, would not give adequate relief from the serious uneconomic disturbances in Industry caused by said Executive Order,

THEREFORE, *Be It Resolved*, That the President of the United States be requested to forthwith terminate the effectiveness of said Executive Order with respect to the Paper and Pulp Industry.

PAPER AND PAPERBOARD
Production by Kind—1933 and 1931

Kind	1933 (Tons, 2,000 Lb.)	1931 (Tons, 2,000 Lb.)
Paper and paperboard, aggregate	9,190,017	9,381,840
Produced for sale	6,877,131	6,939,706
Produced for transfer to other plants of same companies	1,266,038	1,259,025
Produced for use in same plants	1,046,848	1,183,109
Newsprint and similar papers, total	1,213,096	1,514,543
Newsprint, standard, in rolls and sheets	928,332	1,203,263
Hanging paper	66,137	85,974
Catalog paper	62,954	89,382
Poster, novel, news-tablet, lining, etc	155,673	135,924
Book paper, total	1,080,196	1,208,674
Machine-finished, sized, and supercalendered	802,248	952,142
Body stock for coated paper	176,513	199,946
Lithograph	16,737	10,036
Offset	26,515	23,454
Text	5,699	23,096
Other book paper	52,484	23,096
Cover paper	12,697	23,520
Writing paper, total	478,356	487,598
Rag-content	65,998	79,718
Sulphite-bond	282,766	246,971
Other chemical wood-pulp writing papers	129,592	160,909
Wrapping paper, total	1,440,029	1,401,667
Sulphite	267,487	199,780
Sulphate (kraft)	932,598	867,743
Greaseproof	15,671	10,774
Glassine	38,441	37,666
Vegetable and other imitation parchment	9,186	285,704
Other wrapping paper	176,646	.....
Tissue paper, total	406,760	394,623
Toilet	202,861	150,652
Other tissue paper	203,899	243,971
Absorbent paper, total	79,832	76,592
Blotting	7,045	9,565
Other absorbent paper	72,787	67,027
Building papers, total	328,275	395,359
Sheathing	22,288	26,341
Asbestos and asbestos—filled	20,449	44,002
Rag felts and other building papers	285,538	325,016
Other paper	74,486	31,441
Paperboards, total	4,076,290	3,847,823
Container boards	2,020,617	1,903,792
Folding boxboards (bending)	957,626	905,710
Set-up boxboards (non-bending)	571,898	562,176
Binders' board	26,429	32,703
Cardboard	71,667	74,102
Leatherboard	21,437	26,715
Pressboard	7,241	4,000
*Other boards	399,375	338,625

(*) Figures include data for building boards as follows: For 1933, 58,048 tons; for 1931, 112,049 tons.

(From *Side Runs of the Paper Trade*, published by the Bureau of Foreign and Domestic Commerce, Washington.)

◆ THE APPOINTMENT of E. R. Jefferson of 332 South Warren Street, Syracuse, New York, as agent for all Babcock & Wilcox Refractories provides representation for these products in the central and central-western sections of New York State. Mr. Jefferson is already known in the twenty-seven counties he will cover as a representative of several other nationally known manufacturers of industrial and power plant equipment.

◆ LLOYD R. STOWE, formerly manager of the stoker department of the Laclede-Christy Company, and later in a similar capacity with Johnson & Jennings of Cleveland, has recently joined Combustion Engineering Company as District Manager of the St. Louis territory. Mr. Stowe is well known to the power plant field and has long been regarded as an authority on the burning of Mid-west coals.

◆ Italy Urges Increased Cellulose Production

The necessity for increased cellulose production in Italy was stressed recently by the Italian Minister of Agriculture and Forests before the Congress of the Italian Society for the Advancement of Science.

Signor Acerbo pointed out that cellulose products were produced on a vast scale throughout the world and that in Italy, in addition to the two great industries—paper and rayon—cellulose was necessary to the varnish, celluloid, linoleum, photographic, cinema, and vulcanized fiber industries, and was particularly important to the manufacturer of explosives. He further stated that 95 per cent of the cellulose consumed in Italy, amounting to an average of 200,000 metric tons annually, was imported from abroad, and that its cost of approximately 150,000,000 lire constituted a considerable factor in the country's unfavorable trade balance.

◆ Worthington Establishes Western Headquarters

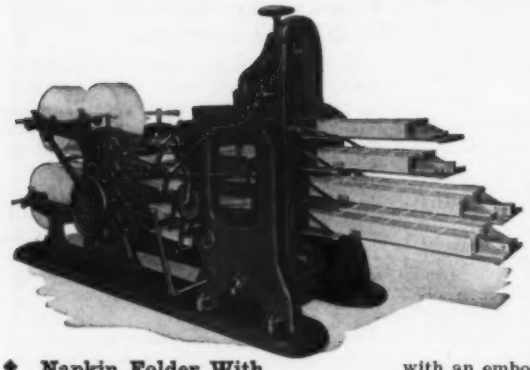
The Worthington Company, Incorporated, Harrison, N. J., has recently established a Pacific Coast regional headquarters at Los Angeles, which will center jurisdiction and development of the corporation's business in the western territory now included in the coverage of the Worthington district offices in Seattle, San Francisco, Los Angeles and El Paso.

This headquarters, under the direction of an executive officer of the corporation, will supplement the efforts of the present district offices and unite with them for the dispatch of business and service to the growing volume of Worthington business in the West. C. E. Wilson, vice president, is in charge of this Pacific Coast Division and accordingly has moved his office from New York to new headquarters at 510 West 6th Street, Los Angeles.

◆ Bituminous Research Elects Officers

Directors of Bituminous Research, Inc., have organized with the following officers: President, John C. Cosgrove, Johnstown, Pa.; vice presidents, L. W. Householder, Indiana, Pa.; R. H. Sherwood, Indianapolis, Ind.; and James W. Carter, Washington, D. C.; treasurer, Col. W. D. Ord, Landgraff, W. Va.; asst. treasurer, C. C. Crowe, Washington, D. C.; secretary, Oliver J. Grimes; asst. secretary, V. V. Wade. The Executive Committee is composed of Mr. Cosgrove, Douglas Gorman, Baltimore, and Charles G. Borwind, Philadelphia. Headquarters office has been opened at 803 Southern Bldg., Washington, D. C.

The Board of Directors authorized the President to set up such standing and special committees as he may find necessary to carry out the purposes of the corporation. It is expected that committees to recommend research facilities, research program and co-ordination will be named immediately.



◆ Napkin Folder With Exceptional Features

A new napkin folder, designed by the Hudson Sharp Machine Company of Green Bay, Wis., has been refined and perfected to a point where it is claimed that it may be used for practically any napkin, whatever the fold, size, or decorative design. The manufacturers further claim that it is impossible for this folder to produce a napkin out of square.

Additional advantages cited for this folder are smoother operation, perfect preservation of embossed or printed design, and an open type of construction which permits any part of the machine to be reached without effort by the operator.

The machine illustrated has four decks or delivery units with a production of 500 napkins on each deck per minute. It is equipped with an embossing unit; and a printing unit for one, two, three or four colors, either surface printed or die inked, may be added if desired.

The folder also may be obtained with extra parts which permit a change from one size of napkin to another, a rapid change from one type of fold to another, or any desired change in count—including a different count or any combination of counts for the various decks or units of the machine.

◆ Longer Length Bearing Stock

Permite leaded bronze bearing stock in bar lengths up to 6 feet is now available through the exclusive distributorship of Joseph T. Ryerson & Son, Inc., Chicago, according to a recent announcement. Diameters available are ⅝ in. to 2 in., by sixteenths, and the stock is turned to an accuracy of plus or minus .002 in.

◆ Hermetically Sealed Capacitors

A new line of hermetically sealed power capacitors about one-half the size and one-third the weight of conventional oil filled units has been announced by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

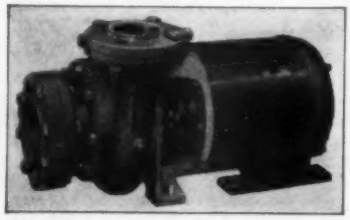
The individual units, impregnated with the new Westinghouse fireproof impregnating medium inerteen, are housed in welded cases of .05 sheet steel, and equipped with rugged solder seal porcelain terminal bushings. The units are assembled in newly designed welded racks, frames, or cabinets for any sort of mounting including pole mounting.

Since the engineering design is based on standard component parts, practically any size capacitor is available from 5 kv-a. at 230 volts up to 1200 kv-a. at 6900 volts.

◆ Close-Coupled Centrifugal Pump

A compact, close-coupled centrifugal pump of the single-stage, end suction type, and with capacities ranging from 100 to 600 g.p.m. against heads up to 189 ft. was recently added to the line of the Chicago Pump Company. In this design, the pump and motor are built together as one unit with a single shaft. The enclosed type impeller is keyed to the motor shaft, which extends into the pump casing. The shaft is of one piece, large diameter, heat-treated steel with a bronze sleeve where it passes through the stuffing box. The impeller is of bronze, and bronze wearing rings seal the impeller hubs against leakage.

There is no packing behind the water seal ring in the stuffing box so that the water seal ring remains in its original position at all times.



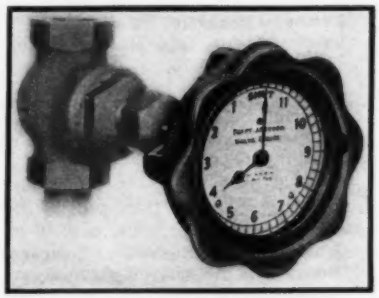
This new pump, furnished in semi-steel or bronze, has a suction opening of 4 inches and a discharge opening of 3 inches.

There are two feet under the pump and four under the motor. The two feet under the pump support the weight of the pipes, thereby relieving the motor shaft and motor frame of any excessive stress or strain. This pump is also furnished mounted on a cast iron base if desired.

◆ Indicator Shows Valve Position

A valve position indicator which tells at a glance whether a valve is shut or how many turns open or what proportion thereof, and which operates by a positive gravity mechanism making it applicable to valves whose stems are in a horizontal or semi-horizontal position, is being marketed by the Tefft-Jackson Company, 29 River Street, Pawtucket, R. I.

The manufacturer states that the indicator is ideal for manual control work as the same setting will give the same result each time the valve is operated. The indicator is adjustable in its own bracket which replaces the regular valve wheel, enabling resetting when the valve wears or when new seat and disc are installed.



When the large and small hands of the indicator are at "shut" the valve is closed; when small hand is at "one" and large hand at "shut" the valve is one turn open and so forth.

A number of sizes are available and special attachment may be had for large valves, rising stem valves and overhead chain operated valves.

◆ Self-Contained Lubrication Unit for Journal Boxes

The Lubrication Products Company, 1531 West 25th Street, Cleveland, Ohio, has announced Stapax, a self-contained lubrication unit for all types of journal boxes.

This unit is designed with positive spring action, which together with capillary attraction introduced by its wool felt pad, applies lubrication throughout the length of the bearing, without loss of oil and without excess oil in the journal box.

In addition to standard sizes, Stapax is made to meet the specifications of journal boxes of any design, and according to the manufacturer, eliminates the need for waste packing.

◆ Improved Rubber Tank Lining

The research division of the American Hard Rubber Company of New York has just announced a very definite improvement in rubber linings for tanks used in processing operations employing highly corrosive solutions. The new lining, known as M R-10, is characterized by a high glaze surface which offers greater resistance to acids and alkalis and is more easily cleaned.

The outer layer of glazed rubber is securely bonded to a relatively thin inner layer of soft rubber which is in turn vulcanized to the steel tank. This soft rubber lamination provides an elastic contact which compensates for contraction and expansion of metal and rubber during changes of temperature. It also acts as a shock absorber to protect the lining against accident and abuse.

Another feature of M R-10 lining is the use of heavy soft rubber fillets underneath the lining in all corners. The new lining is made of a better rubber

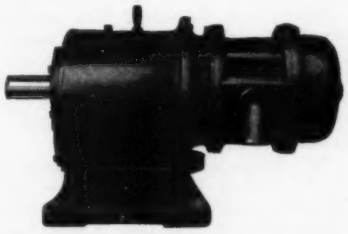
compound which is said to offer longer and more efficient service as proved by actual service and laboratory tests.

Sample test pieces are offered free to any manufacturer interested.

◆ Motorized Helical-Gear Reducers

A new line of motorized helical-gear reducers in which a standard round-frame motor is secured firmly to side of reducer housing by means of an adapter casting which supports the motor-shaft in over-size anti-friction bearings close to the pinion has been placed on the market by the Link-Belt Company of Chicago. All gears are of the helical type with teeth cut from heat-treated alloys steel.

The complete motor, with adapter and motor pinion, may be removed as a unit for inspection or maintenance without disturbing the alignment of the motor or of the gears remaining in the reducer housing. In fact, the motor pinion and gear are removable without disconnecting the driven machine or disturbing the low speed gears.

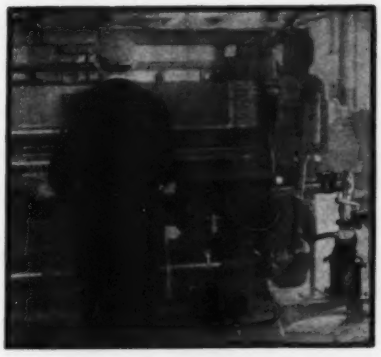


The new reducers may be mounted on floor, ceiling, or wall; and are available in double reduction from ½ to 75 hp. in ratios up to 38½ to 1, and in triple reduction up to 30 hp. in ratios up to 292 to 1.

◆ Safety Control for Paper Cutter

A safety control for guillotine-type paper cutters approved by the New York State Department of Labor, is being manufactured by the American Allsafe Company, 210 Franklin Street, Buffalo, N. Y.

This control, designated as Allsafe control, is arranged so that both hands of every operator must be on control buttons before the knife can begin the downward stroke. If any operator removes either hand from the controls, the clutch is instantly thrown out and the automatic brake stops the knife instantly.



After the knife completes the cutting stroke, it returns to the top position automatically, thus leaving the operator's hands free to prepare for the next batch. Special provision is made for jogging the knife bar up or down while setting up a new blade.

In addition to providing maximum safety, the control is said to provide easier operation through the use of a General Electric Thrustor which eliminates fatigue resulting from the manual labor of constantly throwing in the heavy clutch.

The interlocking controls make it impossible for the cutter to repeat. Furthermore, a second cut can not be made until all hands are on the control buttons.

◆ Friction Tape and Splicing Compound

Jenkins Bros. (Rubber Division), 510 Main Street, Bridgeport, Conn., has announced a complete line of friction tapes and splicing compounds, including regular commercial grades, as well as material to meet the most exacting specifications. These tapes and sealing compounds are being sold under the trade name, "Gold Seal."

The friction tape is strong, "tacky," free from pinholes, non-ravelling and has high insulating qualities.

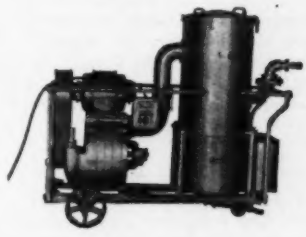
The splicing compound is a high grade rubber insulating tape which conforms to the specifications of the American Society Testing Materials and American Railroad Association.

Full-sized samples of the friction tape and the splicing compound will be forwarded on request.

◆ New Design of Cleaning Machine

Engineers of the Invincible Vacuum Cleaner Manufacturing Company of Dover, Ohio, have just placed upon the market a new cleaning machine which has been designated as the Invincible Industrial Master Truck.

This machine, equipped with a four-stage turbine exhauster driven through a Texrope drive by a 5 hp. motor, is 57 inches high and has a 67-inch by 21-inch base. It is also equipped with the exclusive Invincible dust separator which removes dust, dirt and abrasive material from the air by a triple filter before the air is allowed to pass through the fans, so that only dust-free air is exhausted and the working parts of the machine are protected from foreign materials.



Although the machine weighs 550 lbs., it is stated to be easily movable on a roller bearing swivel-wheel carriage even in congested areas.

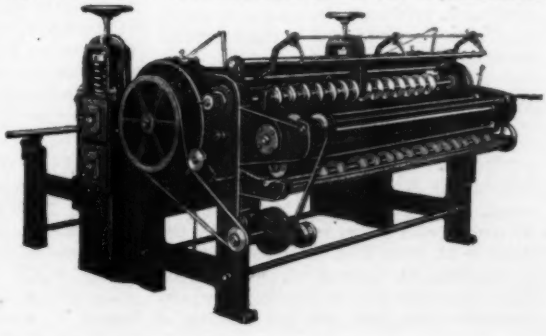
It is suggested by the manufacturers for the cleaning of floors, walls, ceilings, overhead trusses, stairs and elevators, as well as parts of machinery and electrical equipment, and is said to be constructed to stand the hardest usage.

◆ Toilet Embossing Unit

A new toilet embossing unit which can be synchronized with the regular toilet rewinder has been placed on the market by Paper Converting Machine Company, Green Bay, Wis. This new unit, equipped with ball and roller bearings, is made in widths up to 84 inches.

With this machine there is no double handling of the jumbo roll and control of the bulk of the toilet roll is uniform.

A lower first cost per unit, a lower upkeep during operation, and no additional operators than those to make plain roll toilet are the major claims for this machine by the manufacturer.



◆ Rubber Printing Plate Vulcanizer

An entirely new electro-hydraulic vulcanizer for use in the production of rubber printing plates has been announced by H. H. Heinrich, Inc., 200 Varick Street, New York.

The new vulcanizer's heating platens are 24 inches wide by 20 inches deep. The maximum pressure is 72 tons, and the machine itself weighs approximately 3,700 pounds. A convenient new feature is a steel work-plate, provided with a convenient handle and brass rollers which prevent any scratching of the highly accurate working surfaces. Careful insulation is provided to minimize heat radiation. The control equipment includes a thermostat, pressure gauge,

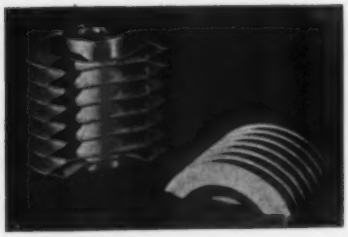
timing clock and thermometer. The movable platen is driven by a fully-enclosed electric motor directly connected to an oil-pump.

Plates made with this new Heinrich equipment are said to be used with little or no makeready. The rubber plates take ink well and produce a clean, sharp impression. Any number of duplicate printing plates can be made from a single mold, and molds can be used and then filed away for future use.

A folder describing this equipment may be obtained by writing the manufacturer.

◆ A New Reinforced Sheave

Under the name of Duro-Brace Texsteel Sheave, the Texrope Division of the Allis-Chalmers Mfg. Co., Milwaukee, Wis., is introducing a new reinforced steel sheave.



Welding at the rim and web, for additional strength, and the interior grid-type construction, for rigidity, which were features of the former design are retained in the new sheave. In addition, the outside walls are reinforced by a convex steel plate.

◆ Rubber Belt Dressing

The B. F. Goodrich Company, Akron, Ohio, has developed a solution for dressing rubber belts. This dressing, which is both safe and easy to apply, is claimed to soften the rubber surface of a belt without penetrating or deteriorating its body. Furthermore, it is stated to increase pulley grip and horsepower delivery of belts for a longer time after application than was previously attainable.

◆ N. Y. Employment Service Studies Container Industry

To familiarize its operating staff with the needs of employers in various industries, for which it is prepared to supply workers, the New York State Employment Service is making a series of studies, one of the paper container industry having been recently completed.

The study, made by a staff of research workers, illustrated by graphs and charts, outlines the various branches of the industry, listing the products included under the various heads of: set-up boxes, folding boxes, corrugated and fibre board, paper tubes, paper containers and displays, including many unfamiliar uses of these products, such as automobile and refrigerator insulation, and the various forms of dry and liquid containers.

More than one-third of the paper container factories of the United States are located in New York State, the survey finds, 149 firms being located in Manhattan, 86 in Brooklyn, 23 in Rochester, 17 in Buffalo and 16 in Queens. The greatest number of factories have from 10 to 24 employes, the next largest group have less than 10 employes, and the third group 25 to 49 employes.

The seasonal peak for the industry occurs in the months of October to December, though the Employment Service finds that all branches of the industry do not entirely conform to the trend of the industry as a whole. About 10 per cent more workers are employed by the industry in the active than in the dull season.

"Seasonal changes in various branches of the industry do not necessarily coincide," says the N. Y. Employment Service survey. "For instance, activity in the production of millinery set-up boxes may occur simultaneously with dullness in candy boxes. Seasonality within the industry also depends considerably upon the market for particular products. For instance, factories which make boxes and containers for manufacturers of hardware, drugs and bottled goods may produce more steadily throughout the year. Thus workers suffer less from seasonal unemployment than in those lines in which production is most closely and directly affected by sharp seasonal demands for consumers' goods."

Listing the various occupations within the industry the N. Y. State Employment Service finds that about 7.5 per cent of the employes are office workers. In set-up box operations more women are employed generally than men, and in folding box operations, where the operations are 90 per cent by machine, most operators are women. Men are chiefly employed to handle relatively heavy products in the corrugated and fibre board container occupations.

The industry is described by the survey as being "in transition from hand to highly mechanized methods of production."

◆ DIRECTORS OF Blaw-Knox Co. today elected Robert F. McCloskey director and vice-president in charge of operations of the plants located at Blawnox, Pa., to replace Wayne Rawley, deceased. Mr. McCloskey was previously general superintendent of the company's Blawnox shops. He has been associated with the company since 1920, starting as manager of a plant then located at Wheatland, Pa. In 1922 he was made production manager of shops at Blawnox, and in 1931 became general superintendent.

◆ Hyatt Roller Bearing Honors 83-Year Old Employee

Charles S. Lockwood, 83-year-old member of the Hyatt Roller Bearing Company, Newark, N. J., has just completed 60 years of continuous service in the employ of John Wesley Hyatt's several enterprises, 42 years of which have been with the Hyatt Roller Bearing Company since its inception. On the evening of December 18, the executive staff and department heads of the Hyatt Roller Bearing Company gave a testimonial dinner to Mr. Lockwood, several of the 100 present having been associated with the guest of honor for more than a quarter of a century.

Throughout Mr. Lockwood's sixty years' service with the Hyatt interests, upward of a hundred patents have been issued in his name. Mr. Lockwood is still hale and hearty, and is an active member of the Hyatt experimental staff.

◆ THE POOLE Foundry & Machine Company, Baltimore, Md., announces the appointment of the Nibling Engineering Sales Co., Colonial Bldg., Philadelphia, Pa., as its representative for the sale of Poole flexible couplings and speed reducers in the Philadelphia district.

◆ Robert Treat Paine II Resigns From G-E

The resignation of Robert Treat Paine II, for 40 years a director of the General Electric Company, has been accepted by the board of directors of the company. A native of New England, Mr. Paine was elected to the board in 1894, two years after the formation of the company and in the middle of the worst year in the history of its operations. His resignation was submitted because of ill health.

Mr. Paine is a great-great-grandson of the Robert Treat Paine who signed the Declaration of Independence as a representative of the Massachusetts Colony.

◆ THE NATIONAL Paperboard Association has moved its offices from 608 South Dearborn Street to 80 East Jackson Blvd., Chicago. The offices of The Paperboard Code Authority are also located at the new address.

◆ Brown Instrument Announces Consolidation

The Brown Instrument Co., Philadelphia, announces a consolidation with the Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. The Brown company will continue as a separate company with its existing organization, but as a subsidiary of the Minneapolis-Honeywell company. Richard P. Brown will continue as president of the Brown Instrument Company and will become an officer and director of the Minneapolis-Honeywell Regulator Company.

The Brown Instrument Company sales and service facilities will be continued from the present main office and factory at Philadelphia and the district offices located throughout the country.

◆ WM. M. GROSS, formerly manager of the Water Treating Division of Graver Tank & Mfg. Co., has been appointed district sales manager in Ohio and eastern Michigan for the International Filter Co., Chicago, with headquarters at The Westlake, Cleveland, Ohio.

◆ New Catalogues and Publications

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—Leaflet 2182 describes the new Seal-Clad Induction Motor with protected windings, built in ratings up to 25 hp., 1,800 r.p.m. The motors are furnished with either ball or sleeve bearings.

Byron Jackson Co., Berkeley, Calif.—A bulletin just released is devoted to the Byron Jackson Hydropress Pumps, which have many applications where tremendous application or lifting of liquids is required. The installation of these pumps in the Grand Canyon where water is lifted 2 miles high . . . pressure to 2800 lb. is featured with interesting color plates and illustrations.

Equitable Paper Bag Co., Inc., Brooklyn, N. Y.—This company has developed a unique sales aid called The Garmenteer. This large book, with spiral binding, contains samples of various colored bags with attractive designs made up to interest the dry cleaners. The idea back of this innovation is to not only enable the cleaner to give service to his patrons, but to employ that service as an advertising medium as well, all of which increases the consumption of paper in that field.

General Electric Co., Schenectady, N. Y. —New publications just received include three bulletins descriptive of Turbines for Mechanical Drive. These bulletins are devoted to the following types respectively: Type D-58, single-stage steam turbines, 40 to 400 hp. non-condensing; Type D-60, Multistage steam turbines, 100 to 2000 hp., condensing or non-condensing, oil relay governor; and Multistage steam turbines, 100 to 2000 hp. condensing and non-condensing steam extraction multiport valve gear.

Harbison-Walker Refractories Co., Pittsburgh, Pa.—A new folder entitled "Insulate with Safety at any Temperature," has just been received. It emphasizes the importance of the selection of the proper refractory as well as the proper insulating material for any insulated furnace construction and describes both insulating brick and lightweight brick and their applications.

Hollingsworth & Whitney Co., Boston, Mass. — As one of the first pieces in a nation-wide, direct mail campaign, this company has sent out a demonstration portfolio that is very useful and attractive. It is done in color with printed tabbed sections, and is spiral bound. The samples and information given in this folder will be found very useful.

Johns-Manville, New York City.—"What About Your Roofs?" is the title of a new brochure just published. Among the subjects discussed are the importance of early repairs, the physical properties and characteristics of various types of built-up roofing materials, and the great importance of expert application and inspection during any roof construction job. Considerable space also is devoted to a discussion of roof insulation and its effect in reducing fuel costs, in improving working or living conditions on upper floors and providing protection to both rood deck and roofing felts.

Kropp Forge Company, 5301 Roosevelt Road, Chicago—"Forging the Impossible and doing the unusual" is the running headline of a bulletin just put out by this company. The heading is a paradox, because the company claims it does make unusual and intricate forgings that are said by others to be impossible. This bulletin relates some interesting facts concerning their achievements along this line.

Louis-Allis Co., Milwaukee, Wis.—This company has prepared a very unusual motor price wheel. It consists of two fiber discs about 8 in. in diameter printed in attractive colors, which quickly and accurately tells the frame sizes and list prices of 448 popular sizes and types of electric motors. One of these will be sent gratis to requests made on company letterheads.

Metropolitan Life Ins. Co., One Madison Ave., New York City—Through the co-operation of 75 companies representing a cross section of industry, current practices with reference to product development are described in "Product Development," a new report issued by the Policyholders Service Bureau of this company. The report tells how these 75 companies have organized their search for new products and their procedure for perfecting them in accordance with the preferences of consumers. Copies are available for distribution.

Merco Nordstrom Valve Co., 400 N. Lexington Ave., Pittsburgh, Pa.—This company, a division of Pittsburgh Equitable Meter Co., has recently issued a 32-page bulletin describing "Merco" lubricants for Nordstrom Lubricated Plug Valves. This bulletin gives detailed information on the correct types of Merco lubricants to be used in over 300 different services. Copies on request.

Michigan Pipe Co., Bay City, Mich.—Toncan Wood Lined Pipe, which is well adapted to pulp and paper mill use, is the subject of a new bulletin just issued. There is a considerable amount of descriptive material and specifications, data and prices on pipe and fittings, also a number of illustrations of mill installations.

Norton Company, Worcester, Mass.—"Grinding Wheel Information and Selection" is a new booklet just received. There are 57 pages in the booklet and the chapters take up the following subjects: Grinding Wheel Information, Wheel Specifications, What Norton Wheel Markings Mean, The Selection of Wheel Specifications, Influential Variable Factors, Factors Affecting the Selection of a Grinding Wheel, Table of Grinding Wheel Recommendations, Operating Rules and General Data, Minimum Wheel Spindle Diameters, Table of Grinding Wheel Speeds and Truing or Dressing Grinding Wheels.

Pfaltz & Bauer, Inc., New York City—A folder entitled "pH Testing by the Indicator Strip Method," describes the Wulff pH Tester, which is claimed to do very accurate work with small or large quantities of highly colored, turbid, viscous mediums containing suspended matter. A detailed method of procedure for pH determination is included, as are complete prices on the Wulff tester.

Thwing Instrument Co., Philadelphia, Pa. —A new leaflet just issued describes this company's line of small single and multiple pyrometers. Ask for Leaflet A 3410.

Worthington Pump and Machinery Corp., Harrison, N. J.—Two new folders just released are devoted to the subject of Worthington Centrifugal Pumps, Single-Stage Volute; Type L, Nos. 3 to 6; and Types LA and LC, Nos. 6 to 12, respectively.

BOOKS

Identification of the Commercial Timbers of the United States—This book aims to make available information which will enable the reader to make accurate identification of the commercial timbers of the United States by characters visible with the naked eye and the hand lens, and by minute characters. The book is 6 x 9 inches, has 223 pages and contains 274 illustrations. The authors, Dr. Harry P. Brown and Alexis J. Panshin, are both on the staff of The New York State College of Forestry, Dr. Brown as Professor of Wood Technology, and Mr. Panshin as Research Assistant. The book is published by McGraw-Hill Book Company, Inc., 330 West 42d Street, New York City, as the first book of a series designated as the American Forestry Series, and is priced at $3.00 per copy.

Neuerungen in der Pappenfabrikation—(New Developments in Board Manufacture) Fifteen years ago there appeared a comprehensive work by Professor Ernst Kirchner entitled "Lehr und Handbuch der Pappenfabrikation" (Text and Handbook of Paper Board Manufacture). Eight years later, this work went into its second edition, and has served ever since as the practical guide for German board manufacturers. In the present booklet of 70 pages, the author strives not to duplicate or summarize Kirchner's work, but rather to bring it up to date. He places special emphasis on the production of fine board, which he clearly defines at the outset. Thereupon he discusses briefly but adequately the raw materials used, the manufacture proper (with special stress on recent developments in machinery and equipment), the drying of boards and their calendering, slitting and sorting. Finally he outlines testing methods now in use, and devotes a few paragraphs to calculating costs. The excellent illustrations, of which there are 28, often bear the well-known names of Voith, Escher-Wyss and Schopper. The book, well printed and indexed, and neatly bound in cloth, was written by Eberhard Oswald Müller, and published by Guntter-Staib Verlag. Biberach-Riss, 1934. Price, 3.60 marks.

On the Origin of Paper—This volume of 64 pages was translated from the French work of Andre Blum by Harry Miller Lydenberg, Director of the New York Public Library. Mr. Blum not only discusses the influence of paper on the spread of printing and engraving, but also takes up the invention of paper in China; its manufacture in the Orient; the oldest mills in Europe; paper in Spain, Italy, France and Germany; causes of the slow growth of the paper industry and the subject of watermarks. In addition, there is a rather extensive reference list of source material for each chapter. The book is priced at $2.00 per copy and is published by R. R. Bowker Co., 62 West 45th Street, New York City.

Opacity Standards, Research Paper RP 709, U. S. Department of Commerce, National Bureau of Standards, Washington, D. C. This paper, by Deane B. Judd, is part of Journal of Research of the National Bureau of Standards, Volume 13, September, 1934, and has just been released in booklet form. The material is divided into chapters headed as follows: Theoretical Relations, Tests of the Standards, Application of the Standards, and Opacity According to the T.A.P.P.I definition. Copies may be obtained from the Superintendent of Documents for five cents each.

Paper Making and Paper Selling—This publication which is issued by the Trade Journals Ltd., 8 Baldwin's Gardens, London, E. C. 1, has a practice of putting out a special issue as a feature of the year's program of publication. The tenth special number of the magazine has just been received and it is one that deserves particular mention. The issue contains 107 pages, exclusive of inserts, and is bound in book style with stiff paper cover. The entire make-up both from a standpoint of contents and typography is a work of art and displays printing and editorial skill. There are a number of highly selective paper inserts, all products of British mills. The complete text of the issue is set in the page in a tint block, and the articles cover a most interesting collection of subjects.

The Paper Mills Directory of Great Britain and Ireland—The 74th annual issue of this directory was released recently. It is a book of 364 pages in which the paper mills in England and Wales, the board mills in England and Wales, and the paper mills in Scotland and Ireland are listed separately. In addition, there are numerous other sections common to earlier editions. Among the new sections that have been introduced for the first time is a list of London agents for foreign paper mills and a tabulated presentation of the import duties on paper and paper boards which are at present in operation. The book is priced at 2/ — (post free 2/6) per copy and may be obtained from your book seller, or direct from the publishers—Printing-Craft Ltd., 18, Featherstone Buildings, Holborn, W. C., England.

◆ A Sun-Driven Motor

Sufficient electric energy to operate an electric motor can be obtained directly from sunlight with a new photoelectric cell, far more sensitive than usual ones of its type, that has been produced in the General Electric Research Laboratory at Schenectady. Even the light from an incandescent lamp, falling on such cells, is sufficient to operate the motor.

Four of the cells, connected together, operate a motor that is rated at four ten-millionths of a horsepower. Enough light energy is converted into electricity when a 75-watt incandescent lamp is lighted at a distance of 8 inches from the cells so that the motor, using three ten-thousandths of an ampere of current, turns at good speed.

The photoelectric cells are of the selenium type, with light-sensitive surfaces which measure approximately two square inches each in area. Over the selenium is a film of platinum, so thin as to be semi-transparent. This film decidedly increases the sensitivity of the cell in its response to light. Such "cells" differ from photoelectric "tubes" in that the cells convert light energy into electric energy, whereas photoelectric tubes do not themselves generate electricity but, instead, control the amount of current permitted to flow through them according to the amount of light they receive. The efficiency of the photoelectric cells is of such order that one watt of power can be obtained from about 20 square feet of cell area in direct sunlight. The cells have about 20 per cent of their effectiveness in the ultra-violet region, and the remainder in the range of visible light.

The motor, direct-connected to the cells, is of special construction, with jewel bearings and other features to reduce frictional and other losses to a minimum.

In the laboratory the cells have been connected in parallel when used to operate the motor with incandescent light, and in series when used in sunlight.

The speed at which the motor turns depends on the amount of light received by the cells. Direct sunlight whirls the motor at about 400 revolutions per minute, but even sky light on a cloudy day through a laboratory window is sufficient to turn the motor rapidly.

No practical applications for the sun-driven motor have been undertaken, for its rating of four ten-millionths of a horsepower—which might be likened to one flea-power, or less—is too low to be of immediate practical use. There remain, however, many practical applications of the photoelectric cell itself.

◆ Chromium Corp. Consolidates Chicago and Milwaukee Plants

The Chromium Corporation, New York City, announces that its Milwaukee, Wis. plant and organization has been consolidated with the Chicago plant. The Milwaukee plant formerly specialized in industrial, and the Chicago plant in decorative chromium plating. The new consolidated plant centralizes the company's activities in the middle western territory and is expected to effect certain operating economies and materially improve service to both types of customers.

Extensive additions and alterations to the Chicago plant permit more efficient processing and commercial industrial CRODON plating, and the new industrial department is designed to chromium plate larger and heavier parts than it has heretofore been possible to handle.

◆ May Make Soap From Wood

According to *Side Runs of the Paper Trade* published by the Bureau of Foreign and Domestic Commerce, soap from wood is one of the possibilities now being studied in Germany. This information was included in a recent report from Trade Commissioner George R. Canty.

Recent investigations have led to the belief that imported soja oil can be replaced by the waste products of chemical pulp. If true, this would be of great interest to the soap industry, which has been obliged to lower its quality level, in view of the enforced shortage of fats. According to the tests made, the process of boiling the wood with sodium hydrates produces rosinous and fatty acids containing a yellowish clear oil suitable for soap manufacture. In addition, rosins suitable for utilization in paper manufacture and also a pitch suitable for the manufacture of printing ink can be recovered.

◆ OLIVER United Filters Inc., announces the appointment of P. J. McGuire as Western Division sales manager with headquarters in San Francisco. Mr. McGuire who succeeds James A. Lane who recently resigned, was formerly with the company at its Los Angeles office.

◆ Ryerson Expands Milwaukee Plant

Ryerson Company is now completing an extension to its Milwaukee plant which will almost double the former warehousing capacity of this plant.

The plant proper has been extended to almost twice its former length. A section of the old warehouse has been insulated and rebuilt with a new central heating system for the storage of special steels. A new two-story modern brick office building with sound deadening ceiling and other improvements has also been erected.

The new heating system will provide proper distribution of heat to prevent any condensation of atmospheric moisture spoiling the quality and finish of the special sheets, cold finished bars, tool and alloy steels, etc., that are being added in stock. Many new sizes of structurals, bars, plates and heavy sections are also included.

These increased stocks and facilities, together with arrangements for overnight shipment of almost any product, in any quantity, from the Ryerson Chicago Steel-Service Plant assures the Milwaukee district excellent service on any requirements.

◆ Fifth Annual Packaging Exposition

The Fifth Annual Packaging Exposition and Conference of the American Management Association will be held at the Palmer House in Chicago, March 5 to 8 inclusive.

The program, which will be marked by many new ideas in the way of events and approaches to common packaging problems, will be divided into four special days. March 5 will be known as Progress Day, with the program given over to addresses summing up advances made in the field of packaging up to the present time. The second day will be known as marketing Day; the third day will come in for special attention as Production Day and the closing day, March 8, will be Industries Day.

◆ David Rees Bowen

David Rees Bowen, vice president of Farrel-Birmingham Co., Inc., and for 45 years its chief engineer, passed away at his home in Ansonia, Conn., December 29.

Mr. Bowen was born in Cwmavon, Wales in 1865. He came to the United States with his parents and in 1883 entered the employ of the Farrel Foundry & Machine Co. as a machinist's apprentice. After serving his apprenticeship for three years, he worked as a machinist for two more years, then entered the drafting room of the company. During the next ten years his exceptional ability as an engineer led to his appointment as chief engineer, a position which he held until 1930 when he was elected vice president in charge of engineering. In 1933, Mr. Bowen relinquished active direction of engineering on account of ill health and became consulting engineer, continuing as vice president until his passing.

He is survived by his wife, a son and a daughter.

◆ AMERICAN DISTRICT Steam Co., North Tonawanda, N. Y. has appointed Tomlinson-MacLachlan, Inc., Cleveland Ohio as exclusive salesagents for its products in Cleveland and Northwestern Ohio territory.

◆ Pittsburgh Equitable Opens Memphis Office

The Pittsburgh Equitable Meter Company announces the opening of a new District Office at 67 McCall Street, Memphis, Tenn., effective January 1, 1935.

Z. A. Stanfield, who has represented this company for many years in a sales capacity, has been appointed district manager of this new territory, and will have associated with him J. H. Ferguson and other representatives yet to be announced. The Memphis Office will serve the territory comprising the states of Alabama, Mississippi, Kentucky, Tennessee and portions of Louisiana, Georgia and Florida. District headquarters for both the Pittsburgh Equitable Meter Company and its subsidiary, the Merco Nordstrom Valve Company, will be maintained in Memphis.

Industry and Accidents in 1934

W. H. CAMERON, Managing Director
National Safety Council

INDUSTRY may view preliminary 1934 accident statistics with mixed feelings. The nation's industrial organizations will regret a seven per cent increase in occupational fatalities, but at the same time, may find some measure of comfort in the fact that this proportionate increase was smaller than the 8.7 per cent gain in all types of accidents.

Still more important than bare figures, however, loom certain developments during an adverse year which are more than heartening. Nineteen thirty-four was indeed a year of contradictions. While it saw all accident fatalities rise from 91,087, as of 1933, to 99,000, thus approximating the all-time high record of 99,300 deaths established in 1930, it also witnessed accomplishments of great importance.

Nineteen thirty-four occupational accidents claimed 15,500 lives, it is estimated, or 1,000 more than in 1933. These occupational deaths, however, were far out-stripped by gains in motor vehicle and home fatalities. Motor vehicle deaths rose to 35,500—a gain of 13 per cent—to establish a new record in highway slaughter. The previous record, 33,675 fatalities, was reached in 1931. Home accident deaths in 1934, increased by 3,000, trailed closely after the motor vehicle, being estimated at 33,000. The rest of the 99,000 fatalities fell into the "other public" group of the National Safety Council's classifications.

As discouraging as these figures may be, 1934 was not an unprofitable year for the safety movement—and industry probably led the way in making valuable contributions.

Outstanding among the achievements of individual industrial units, was the establishment of the world's record for operation without a single lost-time accident. On November 1, the Western Clock Company, of La Salle, Ill., a Council member employing 2,300 persons, had amassed a grand total of 10,029,681 accident-free man-hours. This record, which dated from December 17, 1931, and is still continuing, was made in a plant where such so-called hazardous devices as power presses, screw machines and tool-making machines, are almost continually in use. If 1934 had brought no other compensation, this accomplishment, alone, should serve as inspiration.

In keeping its accident fatality gains proportionately lower than that for any other major classification, industry labored under severe handicaps. There was abroad a spirit of unrest beyond the control of safety departments and which may have proved a tremendous impediment to effective accident-preventive effort in more than one instance. Safety programs often were complicated by the hiring of new employees, many of whom were inexperienced or through idleness had lost their working skill. Then, too, the very magnitude of the numbers returning to work, in need of careful instruction and supervision during the re-employment process, makes one realize how taxed were the resources and facilities of numerous safety departments.

Industry, however, made one safety contribution to the public welfare which should be of lasting value and project its influence in the safety movement far into the future. During 1934, the National Safety Council served the Federal Government by directing accident prevention work on all the vast projects of the Civil Works Administration. To organize activities, members of the Council, mostly industrial concerns, loaned their safety directors to the C. W. A. for brief periods. Of the four million men employed by C. W. A., thousands had never received training in accident prevention and possessed only meagre or out-moded information on first aid. Much of this training will endure.

During the year, the Engineering Department of the Army, following the lead of the Navy, which for years has conducted safety activities along industrial lines with extremely creditable results, also inaugurated accident prevention work with concommitant savings far in excess of the expenditure involved.

C. W. A. traffic surveys brought to light much needed information on accident causation, from which industry, as well as the public, will profit.

In 1934, industry also entered into an experiment which may yet turn down the rising curve on the graph of home, motor vehicle and public accidents. A pioneering venture, it has been organized upon a small scale in order that the program may be conducted with close supervision and concentrated effort.

Figures gathered by many plants during recent years indicate that many more workers are injured off duty than during employment hours. The Western Electric Company, Chicago plant, for example, during a four-year period, lost two employees at work through accidents, while 35 lost their lives outside of working hours.

Working on the theory that industrial safety progress has been made through the influence of the employer and the willingness of the employee to cooperate, 16 companies in New York State, with 9,000 employees participating, inaugurated a six-month campaign to bring safety into the lives of their workers after leaving the plant.

The campaign, known as "After the Whistle Blows," is entering upon its fourth month, being sponsored by the National Safety Council in New York City. The program is so organized that workers carry safety contest activities into their homes and enlist their families. It is broad in outline and embraces driving instruction, home inspection, first aid instruction to employees' families, and also calls for inter-plant contests.

Should this experiment indicate that workers and their families are susceptible to this form of safety education, 1934 will have been a year of signal advancement in safety, by providing a vital approach to the home, public and traffic safety problems.

In reviewing 1934, it is apparent that it was a year fraught with difficulties. Yet, despite the adverse statistics, it really was a year of growth; the adversity has merely stimulated the safety leaders of the country to greater and more determined efforts, with the result that we may look back to 1934 as a year of revitalization, in which may be the roots of future growth.

◆ ◆ ◆

T.A.P.P.I. Program Lists Many Important Subjects

When the Technical Association of the Pulp and Paper Industry meets at the Waldorf-Astoria in New York February 18 to 21, one important feature of the program will be the subject of paper sizing. This topic, which has received the attention of papermakers for generations, is justified on the T.A.P.P.I. program because of the new knowledge that has been dug up by research men during the past year or two.

Sizing Symposium

A symposium on the subject of paper sizing will be conducted by Dr. Helmuth C. Schwalbe, of Dill & Collins, Inc., chairman of the T.A.P.P.I. Committee on the Preparation of Non-Fibrous Materials. The following papers will be presented:

(1) Our Present Knowledge of Rosin, by E. A. Georgi, of the Hercules Powder Company Experimental Station, Wilmington, Del.

(2) Physical and Chemical Properties of Aluminum Sulphate Compounds, by Dr. A. W. Thomas, of Columbia University Chemistry Department.

(3) What I Do Not Know About Sizing and Capillary Flow, by Miss R. M. Cobb, of the Lowe Paper Co., Ridgefield, N. J.

(4) Physico-Chemical Principles in the Cooking of Rosin Size, by A. C. Dreshfield, of the Paper Makers Chemical Corp., Kalamazoo, Mich.

(5) Observations in the Cooking of Size and the Losses in Size Making, by M. A. Krimmel, Hammermill Paper Co., Erie, Pa.

(6) New Developments in Cooked Sizes and Their Emulsifications, by J. A. De Cew, president of Process Engineers Inc., Mt. Vernon, N. Y.

(7) The Fundamentals of the Bewold Process, by Dr. Bruno Wieger, Bayreuth, Germany.

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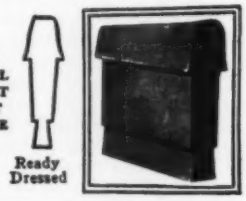

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(8) Physico-Chemical Principles of the Bennett Process, by Dr. O. F. Neitzke, Technical Director of Bennett Inc., Cambridge, Mass. (This paper will point out recent developments in the use of amorphous waxes.)

(9) Chemistry of the Delthirna Process (Speaker to be announced).

(10) Raw Materials Specifications, by C. E. Peterson, Riegel Paper Corp., Riegelsville, N. J.

Stuff Preparation Symposium

The pulp and paper companies that hope to be in business for several years to come are now giving particular attention to their stuff preparation (beating, jordaning and refining) problems. To assist in this important study, the Stuff Preparation Committee and the Fundamental Research Committee of T.A.P.P.I. are preparing a program of outstanding merit for the annual meeting.

Papers sponsored by the Fundamental Research Committee are as follows:

(1) The Effect of Temperature on the Beating of Rag Stock, by H. F. Lewis and LaVern A. Gilbertson of the Institute of Paper Chemistry, Appleton, Wis.

(2) A Procedure for Investigating the Relation of Freeness and Fiber Size to the Hydration of Stuffs, by F. A. Simmonds and P. K. Baird, U. S. Forest Laboratory, Madison, Wis.

(3) A Summary of Recent Literature on Hydration, by F. A. Simmonds, Madison, Wis.

The papers sponsored by The Stuff Preparation Committee are as follows:

(4) Beating from the Standpoint of Control and Design, by A. B. Green, Consulting Engineer, Needham, Mass.

(5) Beater Control, by G. D. J. Ormsbee, of the Toledo Scale Co., Toledo, Ohio.

(6) Simplified Terms and Viewpoint on Stuff Preparation, by D. Manson Sutherland, Consulting Engineer, Trenton, N. J.

(7) Paper Stock Treatments, Mixing and Beating with Rods, by S. D. Wells, Combined Locks Paper Co., Combined Locks, Wis.

(8) Relationship of Stuff Preparation Theories to Practice, by Harry Williamson, Consulting Paper Making, Robert Gair Inc., New York City.

(9) Beating versus Jordaning in Stock Preparation, by R. D. Kehoe, Paper and Industrial Appliances Inc., New York City.

(10) The Adverse Function of Gases in the Manufacture of Paper, by J. A. De Cew, Process Engineers, Inc., Mt. Vernon, N. Y.

Paper Color

The grading activities of the various paper trade associations have emphasized the importance of paper color, particularly of writing and printing papers. At the annual meeting there will be three truly remarkable lectures covering the essentials of the subject of color.

Dr. A. E. Gessler, director of research of the International Printing Ink Corporation will talk on The Chemistry of Color. There are facts about the chemistry of color that should be generally understood. Certain colors are not now available. Some of these will be commercially available in the near future. Briefly, this lecture covers in lay language and with dramatic exhibits, the latest chemical developments in color. It portrays the steps being taken by color chemists that will effect new vehicles—progress in producing non-fading—alkali proof—permanent colors for packages—for general printing and for paints.

Prof. A. C. Hardy of the physics department of the Massachusetts Institute of Technology will discuss The Physics of Color. It is not generally known, but color can be measured and specified more accurately than any physical quantity. The human eye is fallible, but with the aid of an instrument using the photoelectric cell, the curve of a color can be automatically and graphically traced. Such a curve reveals characteristics of immense aid in selecting a proper color—in specifying a color—in predicting its behavior in mixtures or for example, in the three color process of printing.

George Welp, well known authority on the psychology related to color in advertising, will speak on Color in Use. There are certain color principles that determine visibility, legibility, the power of color and its effect. This lecture presents color from the point of view of the artist, the

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designer and the user. Mr. Welp is, first of all, an artist and is a well known figure in advertising and art circles. He has had a broad background of experience in the newspaper and magazine field, as a designer of packages and he was for over ten years art director of the Blackman Company.

Professor Hardy is the author of *The Principles of Optics*, and occupies the Chair of Physics at The Massachusetts Institute of Technology. His distinguished work in colorimetry has been recognized by The Bureau of Standards.

Groundwood Program

The Mechanical Pulping Committee of T.A.P.P.I. has announced its annual meeting program. M. P. Chaplin, vice president and chief engineer of the Keyes Fibre Company, Waterville, Maine, is chairman of the committee.

Bernard Bornstein, technical adviser of the Grindstone Division of the Norton Company, Worcester, Massachusetts, will talk on Some Developments in European Groundwood Mill Practice. Mr. Bornstein has recently visited the various mills in Europe using the mechanical pulping processes.

W. E. Brawn, assistant general superintendent of the Pejepscot Paper Company, Brunswick, Maine, will report on The Developments in Groundwood Mill Operation in America. Mr. Brawn, as vice chairman of the committee, has been keeping in touch with improvements in the industry.

H. Wyatt Johnston, chief of the Pulp and Paper Division of the Forest Products Laboratories of Canada, Montreal, will discuss The Experimental Mechanical Pulp Production at the Research Institute. Dr. Johnston will report on the work being done on high speed grinding and other procedures.

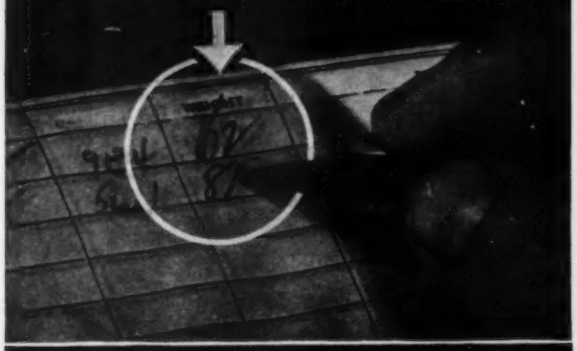
C. E. Curran, chief of the Pulp and Paper Division of the United States Forest Products Laboratory, Madison, Wisconsin, will discuss A Program of Groundwood Research. The Forest Products Laboratory has recently moved into its new, well equipped and commodious quarters at Madison, and will soon launch a program of outstanding merit which should do much to add to the knowledge of the fundamentals of mechanical pulp manufacture.

◆ ◆ ◆

◆ Non-Uniformity of Groundwood Pulp

A comprehensive, practical study of the variations in the heat of friction imparted to pulp and the differences in the pulp properties at different points or zones across the width of pulpstones [Cf. also F. Rühlemann, Papier-Fabr. 29,461,479 (1931)]. By introducing a thermocouple as close to the stone as possible, in a magazine grinder, and in an area which contacts the freshly ground pulp, the author was able to determine with sufficient accuracy the temperature differences in the slush formed between a width extending 15 cm. from the border on the left (a), the center (b), and the remaining 15 cm. zone to the right border of the stone (c). In this particular case the entire width of stone was 65 cm., and cold grinding was used. The hottest area was in the (b) region, which was 4.4 deg. C. warmer than (a) and 10.2 deg. warmer than (c). Qualitatively a similar result was obtained in the case of a continuous grinder, with a pulpstone 115 cm. wide, operating at a higher temperature (approximately 70 deg.). Here the temperature differences were even more marked, with the warmest region also at the mid-zone. The degree of grinding as evaluated by the Schopper-Riegler tester varied at different points, and samples taken from 8 successive zones (into which the width of the stone was arbitrarily divided) were markedly different when submitted to screen tests. Although the results are not entirely consistent, it is evident that the most complete disintegration of the wood (as indicated by the per cent of wood flour) occurs towards the center of the stone. The data are fully tabulated and diagrammatically represented. They suggest that temperature recording devices be installed at suitable points directly following the grinding operation, and that these serve in controlling the addition of water which should be regulated by means of individual sprays. This should lead not only to more uniform products, but to the saving of power now used in operating pulp screens, refiners, pumps, etc. It would also prevent uneven heating of the face of the stone. Walter Drechsel; Papier-Fabr. (Sonderausgabe und Auslandsheft) 31, No. 31A, 41-44 (1934).

BIRTHPLACE OF LOSSES



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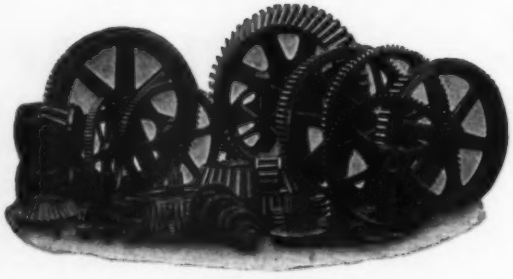

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July 1, 1934 to June 30, 1935

Scores as of November 30, 1934 (Cum.)

22 Mills Still Have Perfect Record

PERFECT SCORES

Division I—Paper and Pulp Mills

	PARTICIPANT	MILL	LOCATION
GROUP A			
GROUP B	St. Croix Paper Co.	Woodland	Maine
GROUP C	Escanaba Paper Co.	Escanaba	Michigan
	Crystal Tissue Co.	Middletown	Ohio
GROUP D	Kimberly-Clark Corp.	Lakeview	Neenah, Wis.
	Bergstrom Paper Co.	Neenah	Wisconsin
	Sylva Paperboard Co.	Sylva	North Carolina
	International Paper Co.	Webster	Orono, Maine
	Hollingsworth & Whitney Co.	Aroostook & Cobbossee	Gardiner, Maine
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	International Paper Co.	Livermore	Chisholm, Maine
	U. S. Envelope Co.	Worcester	Massachusetts
	Spaulding Fibre Co., Inc.	New Mill Plant	Milton, N. H.
	International Paper Co.	Riley	Riley
	U. S. Gypsum Co.	Gypsum	Ohio
	Spaulding Fibre Co., Inc.	Hayes	North Rochester, N. H.
	Mead Paper Co.	Rockport	Indiana

Division II—Remanufacturing

Container Corp. of America	35th Street	Chicago
Texas Corrugated Box Co.	Dallas	Texas
Container Corp. of America	Natick	Massachusetts
Southern Container Co.	Houston	Texas
U. S. Gypsum Co.	Genoa	Ohio
Bemis Bag Co.	East Pepperell	Massachusetts

IMPERFECT SCORES

	Key No.	Rank	Disabling Injuries	Frequency Rate
GROUP A	P-19	1	1	1.775
	P-108	2	3	3.348
	P-64	3	5	6.436
	P-30	4	4	6.682
	P-27	5	8	6.915
	P-62	6	6	7.651
	P-13	7	6	8.039
	P-18	8	8	8.233
	P-12	9	5	9.295
	P-10	10	5	9.815
	P-44	11	8	12.403
	P-95	12	7	12.726
	P-67	13	12	13.764
	P-114	14	13	15.038
	P- 1	15	13	15.296
	P-31	16	10	17.194
	P-87	17	14	19.186
	P-69	18	13	19.618
	P-28	19	41	23.130
	P- 2	20	13	23.864
	P-102	21	21	24.794
	P-101	22	15	28.202
	P-78	23	17	30.094
	P-74	24	29	46.549
	P-71	25	36	66.307
GROUP B	P-25	2	1	3.214
	P-23	3	2	4.140
	P-68	4	2	5.168
	P-56	5	2	6.486
	P-21	6	3	6.594
	P-40	7	3	6.753
	P-11	8	3	8.833
	P-70	9	4	10.449
	P-112	10	5	12.719
	P-60	11	5	13.075
	P-45	12	8	16.907
	P-22	13	6	17.215
	P-26	14	7	18.636
	P-46	15	7	23.089
	P-16	16	9	25.835
	P-76	17	9	26.737
	P-32	18	9	27.251
	P-73	19	14	30.885
	P-82	20	13	31.338

No November Report: Bemis Bro. Bag Co., East Pepperell, Mass., P-31, P-32, P-88 and P-89.

	Key No.	Rank	Disabling Injuries	Frequency Rate
GROUP C	P-72	3	1	3.825
	P-79	4	1	4.216
	P-100	5	1	5.524
	P-89	6	1	7.945
	P- 4	7	2	10.888
	P- 3	8	3	11.057
	P-43	9	2	11.210
	P-17	10	2	12.034
	P-51	11	4	14.089
	P-75	12	3	15.618
	P-59	13	5	19.356
	P-88	14	3	19.440
	P-33	15	4	20.100
	P-48	16	5	20.894
	P-61	17	5	22.985
	P-104	18	7	23.711
	P-41	19	5	26.222
	P-49	20	5	27.632
	P-29	21	6	30.632
	P-77	22	10	34.836
	P-14	23	6	36.906
	P-113	24	10	57.066
	P-47	25	15	70.946
	P-50	26	22	128.116
GROUP D	P-94	14	1	8.978
	P-42	15	1	14.159
	P-99	16	1	16.979
	P- 7	17	2	17.524
	P-110	18	1	22.635
	P-83	19	4	26.727
	P-107	20	3	27.951
	P- 5	21	5	34.911
	P-63	22	2	35.525
	P-24	23	4	47.233
	P- 8	24	4	60.059
	P-08	25	8	94.029

DIVISION II

R- 2	7	1	3.727
R- 5	8	2	5.402
R-16	9	1	7.213
R- 6	10	4	8.362
R- 3	11	1	12.785
R- 9	12	4	31.814
R-13	13	4	35.791
R- 1	14	8	45.782

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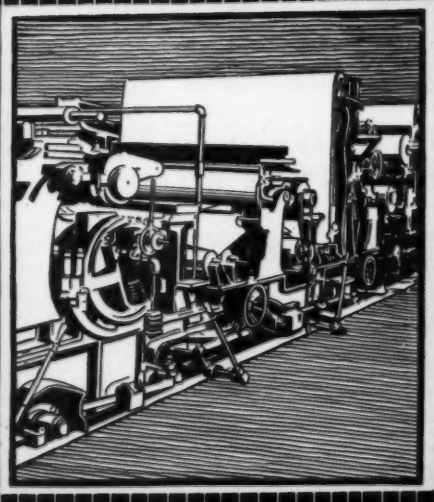

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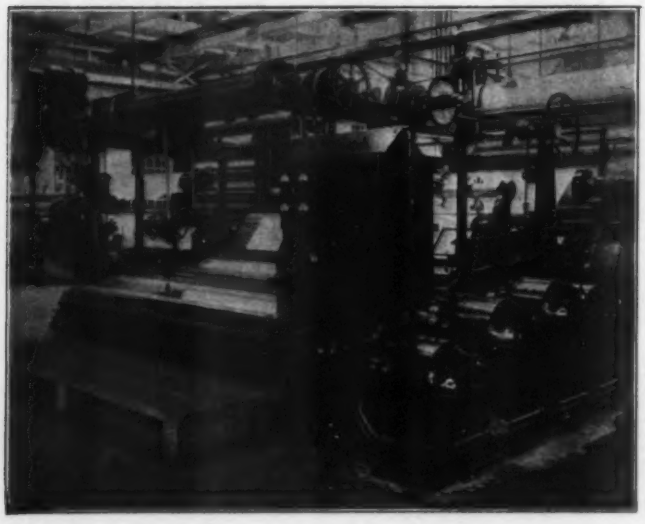

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The Reliance Electric Drive (Patented) is adaptable to both four and two-drum winders. It can be supplied for either alternating or direct-current circuits.

POWER

GENERATION + UTILIZATION + MAINTENANCE

This section turns the searchlight on power and its allied problems, showing big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

By W. S. JOULE

◆ Entrained Air in Oil

It is a well recognized fact that entrained particles of air in any liquid, when exposed to pressure and heat, have a tendency to become nascent and act as a powerful oxidizing agent. The oxygen of the air in its nascent form is particularly active and will attack not only the liquid containing it, but all metal with which it comes in contact. This is noticed particularly in steam boiler practice when such air particles cause active corrosion in feed pumps, feed lines, and in the boilers themselves. The work of this nascent oxygen is evidenced by the pitting of the boiler drums, boiler tubes, headers, etc. Much work is now being done toward the deaeration of feed water, thus removing the air before it reaches the economizers and boilers. Any entrained particles of air in the oil of a circulating system, when subjected to pressure and heat, act in the same way and tend to break down the oil. In fact, the lubricating oil, the bearings, lines, pumps and all other metallic parts of the system may be attacked.

Circulating oil in the system always contains more or less entrained air and when the temperature of the oil is above normal, that is, higher than 130 deg. Fahr. this entrained air becomes active and has a strong tendency to oxidize the oil. This will be realized when it is remembered that the oil film in the bearings is extremely thin and that the air is present in fine bubbles which are intimately mixed with the hot oil. The effects of this oxidation are again readily recognizable by the black deposit, the slimy formation, the burnt smell and the formation of petroleum acid.

In order to prevent the entrainment of air in the oil of the circulating system, every precaution should be taken in the handling of the oil to eliminate churning, spraying or spouting of the oil. The oil of a circulating system should never be handled by a centrifugal pump, as it is a difficult matter to prevent air leaks around the shaft packing glands of such pumps. These leaks allow air to enter directly through the glands into the pump suction and into the pump where it is churned, broken up and frothed into the oil by the operation of the pump. The oil in circulating systems should be handled by means of a rotary plunger pump, a geared plunger pump or a duplex steam pump, properly fitted with cushion chamber to eliminate pulsations. The suction of the pump should be so arranged that at no time will it draw air.

All sprays and spouts and streams of oil dropping directly into the body of the oil, should be carefully avoided, as any such action tends to entrain air into the oil. Oil returns should not be allowed to drop from a height into the tank or filter, but should be led from the end of the return pipe into the oil body by means of a deflecting pan which will greatly diminish the splashing of the oil and the entrainment of air.

◆ Tight Dampers Important When Banking

While leaky dampers have little effect on efficiency when the boiler is in operation, they are a serious source of loss when boilers must be banked for long periods. In some tests recently made on banked boilers it was found that with a leaky damper it was difficult to maintain over 3 or 4 per cent CO_2 but when this damper was made tight so that a slight pressure was maintained in the setting, the CO_2 increased to 10 or 12 per cent and the efficiency over a period of 32 hr. with an average output of 10 per cent rating was 68 per cent. The claim has often been made by operators of oil and powdered coal burning plants that their banking costs are much lower than with stokers. This lowered banking cost is probably largely due to more attention having been paid to tight dampers.

◆ Corrosion of Idle Boilers

One of the most dangerous features in the operation of boiler plants which are only required during the winter months is the temptation to neglect the necessary maintenance work after a season of heating operation has been completed. Good operating economy requires that the steam generating, mechanical and electrical equipment be put in a first-class state of repair prior to the opening of each heating season. However, to know when to replace worn parts with new parts—in short, to know what work to do and what work not to do—requires the exercise of sound judgment based on long operating experience.

In the case of boilers operated but a portion of the year the pitting of shells is apt to become serious, especially where water has been permitted to remain in the boilers at times when not in operation. At least once in twelve months every boiler drum should be dried out, thoroughly cleaned and carefully inspected for evidence of pitting and corrosion. Where such action is found its prevention must be the subject of special attention and concern. Exterior corrosion may be checked by cleaning and painting, but a panacea for internal corrosion has not yet been found. Probably the best preventive of pitting and corrosion in boilers is their continued operation under suitable conditions and with proper feed water. All attempts to check corrosion by the application of protective coatings to the inside of boilers are but temporary and seldom successful.

◆ TO DISTINGUISH between a parallel- and a series-connected armature winding, first note the center of the coils at the back of the armature. If the leads to the commutator are in the same direction as the back ends of the coil, that is, if they swing in toward the center, the winding is parallel-connected. If the leads swing around the armature, away from the center of the coil, the winding is series-connected.

◆ Does Your Record System Fulfill Your Needs?

Before we begin the work of the new year it might be well for us to take account of last year's work in order to determine just where we stand. Can you, for instance, in looking over your records tell at a glance exactly how much was spent for the operation of your plant last year? Can you tell how much more, or less, coal was burned last year than the year before? Do you know with a reasonable degree of certainty how much was saved as a result of those improvements which you effected in the boiler room? If the boss calls up this afternoon and wants to know why you have recommended those changes in the feed heating system, can you show him, in black and white, that the proposed changes will pay for themselves in a year or two years as the case may be? Do you know how much money was spent last year for oil, for packing, for labor, etc.? Do you know whether your equipment is operating at efficiencies comparable with the usual efficiencies of modern apparatus? Can you answer these questions and others of a similar nature?

If you can answer them accurately and with a minimum amount of effort, your system of records is probably well suited to your requirements. On the other hand, if many of them are unanswerable or if days or weeks of investigation are necessary to get answers, it is time for you to devise and use an adequate system of records.

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The Thwing pH Meter is a simple, practical instrument.

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These may be furnished in Duriron or in the high strength alloy steels for which the Duriron Company has gained an international reputation.

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Durco Alloy Corrosion Resisting Steels for the Sulphite Mill

DIGESTER FITTINGS **ACID VALVES**
PIPE FITTINGS **ACID PUMPS**
DIGESTER STRAINERS

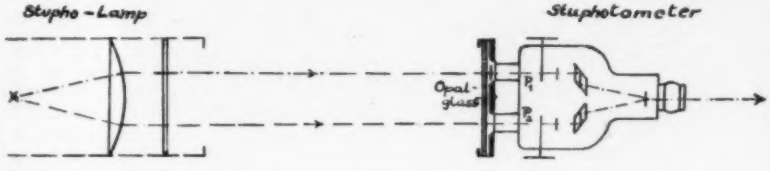
TECHNICAL DEVELOPMENTS

IN THE PAPER INDUSTRY

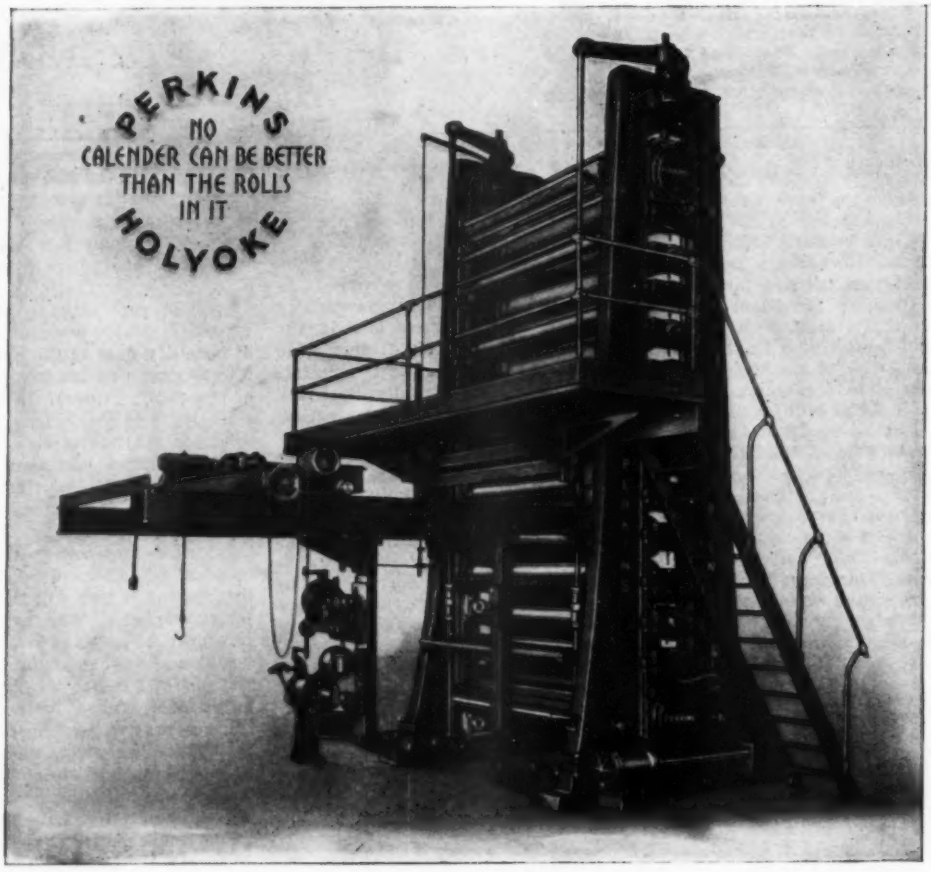
The following abstracts are of the latest developments found in the foreign press and in the patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

◆ Optical Studies on Pulps

These investigations were published jointly by the laboratories of the Institut für Textil- und Papier Technologie of the Technische Hochschule and the Deutsche Forschungs Institut für Textil Industrie (both) of Dresden. They include an unusually detailed study of the influence of beating and loading on the optical properties of the sheet, and are the results of several years of research. (A later series will take up the influence of cooking conditions and of calendering.) In fifteen cases the materials used were bleached and unbleached sulphite and sulphate pulps of varying origin. The others were individual samples of straw, esparto, manila, cotton, and linen pulps. In all cases the degree of beating (S.R.) thickness of the sheet, and weight per unit area and per unit volume were tabulated, and all sheets were formed, under standardidized conditions which are



carefully described. The so-called (Zeiss) Stufenphotometer (Stupho) was used in measuring brightness, which, for non-transparent surfaces, is defined as the ratio of the amount of reflected to the amount of incident light. However, since, with increasing degree of beating, the transparency of the sheet increases, the investigator took precautions in making photometric measurements on surfaces in which (n) sheets were placed over each other, where with the number (n) transparency was no longer apparent to the naked eye [while (n minus 1) sheets still showed some transparency]. Measurements were also made in which single sheets were placed on black velvet, and on a standard white background of blanc fixe. As indicated in the figure, the Stuphotometer and its lamp are not mounted vertically as is usually the case, but horizontally. The parallel light waves fall upon (and at right angles to) an opal glass disc which covers both pupils of the photometer equally, and which serves to diffuse the light as perfectly as possible. Between this glass plate and the contiguous tubes of the measuring drum of the photometer, and directly in front of pupil (P_1), is placed the sample to be tested. Prior to its insertion both drum openings have been adjusted to the 100 mark. Subsequently the other pupil (P_2) is so adjusted that the light intensities are equalized. The ratio of the light intensity diminished by the absorptive power of the paper to the undiminished intensity, is directly proportional to the ratio of the diaphragm opening (P_2) to the diaphragm opening (P_1). This ratio is termed lambda, the transparency, or the light transmission factor. Mathematical-optical relationships are then derived, fully discussed, and the remission absorption, extinction, etc., are defined in these mathematical terms. The author shows that Micoud's simple formulation (Cf Le Papier, May, 1931, p. 38) which indicates that transmission factors are inversely proportional to the thickness of the sheet are incorrect. He proposes another formulation, proving its applicability by a series of experiments. The transmission number obtained by the apparatus of Klemm (Cf. Herzberg, Papierprüfung, 7th ed., p. 121) is also incorrect, as the author demonstrates in detail. Using the analyzing ultraviolet quartz lamp, the author obtained fluorescence colors, which in the case of the wood pulps and a manila pulp agreed quite well with these recorded by Klein (Cf. Papierfabr. [1930] p. 447) and by Gruenemann (Cf. Le Papier [1932] p. 531). However, there are marked variations from Klein's results in the case of cotton, straw, and esparto pulps. In general, the longer the beating, the greater the decrease in the brightness of the fluorescence. The following is a brief summary of the experimental data on brightness as correlated with beating:—(1) the brightness of a pulp sheet decreases with increasing degree of beating, assuming that all other factors that have an influence on optical properties are kept constant; (2) the most rapid decrease in brightness with beating is shown by wood pulp sheets; (3) at the same rate with which brightness of a sheet decreases, its transparency increases; (4) a relationship between the change in optical properties of a pulp and the physical changes wrought in the cellulose structure during hydration is discussed on the basis of recent hydration theories; (5) the influence of hydration is shown optically by the unifying effect on the refractive indices of the beaten pulp, and this in turn brings with it changes in optical properties, conforming with the laws of optics. In his second study, the effects of the following loading materials on the optical properties of the pulp were investigated:—talc, kaolin, $CaSO_4$ and blanc fixe. The percentage of fillers added, varied from 0-100 per cent of the weight of bone dry fiber in the pulp (i. e. from 0 to 50 grams on the basis of 100 grams of the final mixture). In each case the retention was checked by an ash determination on the finished sheet, and the thickness and weight per unit area were also determined. Starting with a definite measure of brightness of a sheet containing no loading materials, the brightness increases with rising percentage of filler, depending on the brightening capacity of the loading material employed. For example, in the intermediate range of brightness (about 0.450) with a degree of beating of 50 S.R., blanc fixe has the greatest brightening effect (about 45 per cent). The other fillers are very close to each other in brightening effect, which approaches 33 per cent. The opacity of the sheet rises with increasing filler content, and depends on the individual covering power of the loading material used. Naturally the effect on the transparency of the sheet is a decreasing one. For example in a zone where lambda (as defined above) is 0.750, it was shown that a sheet whose ash content was 15 per cent showed a decrease in light transmission of about 45 per cent (for kaolin and blanc fixe) and about 30 per cent (for talc and annaline [i. e. $CaSO_4$]), as compared with the transparency of the original unloaded sheet. As the result of ultraviolet irradiations the following generalizations were drawn:—(1) the fluorescent colors of the pure loading materials have no connection with the colors induced in the finished sheet; (2) with increasing filler content there is an increase in the brilliance of fluorescence colors, which is most marked in the case of blanc fixe.; (3) the top surface of the sheet shows a brighter fluorescence than does the side that has made contact with the wire screen. This indicates the accumulation of fillers on the upper side of the sheet, and by such means the two sides of the sheet may be differentiated. The articles include references to recent literature, ten tables and 14 series of graphs. Hans Ress. Papier-fabr. 32, No. 33, 361-367; No. 35, 377-384; No. 36, 385-392; No. 38, 401-407; No. 39, 409-414 (Aug. 19 and Sept. 2, 9, 23, and 30th, 1934).



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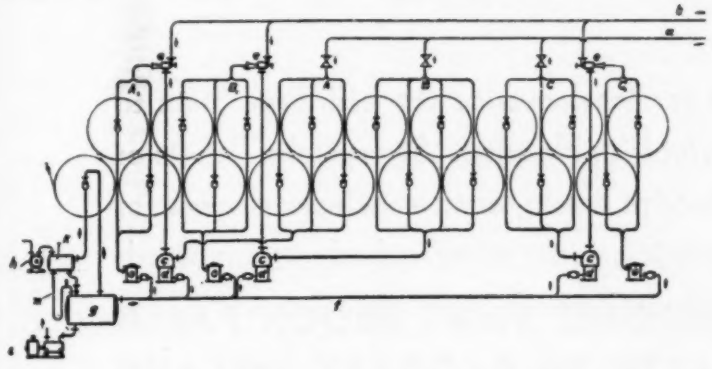
RAG AND STOCK CUTTERS

◆ Dryers in Paper and Board Machines

The figure shows the dryers of a papermachine in which the central group (the high pressure cylinders) (A), (B) and (C) are connected directly with the main steam line (a). The low pressure cylinders (A^1), (B^1) and (C^1) lying at the ends are heated by means of the excess steam from the high pressure group, after this has been regenerated by means of injectors (e) and



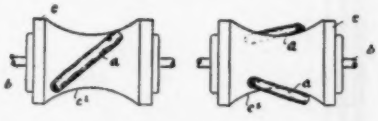
steam from the line (b). The condensation-steam mixture which leaves (A), (B) and (C) is led into steam separators (c) and (d) that are connected with condensing chambers. The steam is sucked in by a series of injectors (e) and thus introduced into (A^1), (B^1) and (C^1). Each of these low pressure cylinders drains into a condensing chamber (o). The combined condensates are led through (f) into the collecting chamber (g). A vacuum pump is so arranged that it places both (g) and (h) under diminished pressure, and the water vapor thus formed is drawn into the first cylinder where condensation ensues, which furnishes heat to the cylinder and to the sheet. The condensate from this first cylinder flows into an auxiliary receptacle (k) connected with (h), and thence through the line with trap (m) into (g). Thence, together with the remaining condensates, it is pumped back to the boiler house by pump (i). Walter Kapp. Bad Homberg. German Patent No. 600,562, Class 55d.

◆ New Pulping Method for Spruce

A long and very suggestive article. The delignification depends on treatment of the wood with gaseous chlorine, followed by extraction with 80-90 per cent alcohol in the presence of HCl. The reflux extraction is continued during 6 to 12 hours, and the chlorolignin is thus almost completely removed. (Cf German Patent Nos. 535,744 and 552,481.) The author concluded (contrary to the present prevailing hypotheses) that the cellulose is bound chemically to the lignin of the wood. His reasoning is based on the following experimental data: If the chlorinated wood is washed to neutrality with water, cautiously dried and then extracted with 90 per cent ethyl alcohol, very little chlorolignin is removed. If however small amounts of HCl or sulphuric acid are then added, the entire mass of chlorolignin is readily extracted. This, in the estimate of the author, is evidence of a direct acid hydrolysis. The crude cellulose, after washing with alcohol, is grey, and comprises 47 per cent of the dry weight of the wood. After bleaching at stock density of 4 per cent with Javelle water, 41 per cent of a white, long-fibered pulp was obtained containing only traces of the so-called oxycellulose (methylene blue test) and of resin, 1 to 3 per cent pentosans, and 80-88 per cent alpha cellulose. Its copper number (Schwalbe-Haegglund) is below 1. The properties of the pulp however depend largely on the technique of the original chlorination, and on the moisture content of the wood. A thorough study was made on the alcoholic extract which contains about 53 per cent of the wood, and from which alcohol may be largely recovered together with HCl, furfural, and small amounts of acetaldehyde. Various recovery methods are described. A detailed account is given for working up the residual chlorolignin. (For scientific investigations the latter was precipitated with water from the alcoholic extracts and thus obtained in purer form.) Calculated on the chlorine-free basis, this comprises about 22.5 per cent of the dry wood. Besides this, the volatile portions represent 3 per cent, the so-called tannins about 4 per cent, sugars (calculated as glucose) about 12 per cent, and acids related to the sugars 1.5 per cent. The work reported herein shows analogies to that of Kürschner and Hoffer (Cellulosechemie, 12,281 [1931]) who used nitric acid and alcohol in their delignifications. The chlorolignins and the nitrolignins thus obtained are remarkably similar, and a greater part of this paper is devoted to a thorough study of chlorolignin. The latter was examined with regard to solubility, absence of carbohydrates, oxidation, and dry distillation. It was methylated, and the methyl derivatives were studied. The crude chlorolignin was separated into two types of components; chlorolignin proper, and a so-called chloro-resin. Detailed tabulated data as well as tentative formulas for these substances and their derivatives are given. Qualitative and quantitative fusion experiments in which NaOH was allowed to react with the chlorolignin under a great variety of conditions indicated that the best working time was about 60 minutes. Twenty parts by weight of chlorolignin react with 60 parts of NaOH, 30 parts of water, and the mixture is introduced carefully into a nickel or copper container which has been heated in an oil bath kept at 220 -240 deg. C. This means that the actual fusion temperature is about 200 deg. The mean result of a series of such fusions (calculated on the chlorine-free basis) yielded 37.3 per cent of so-called lignic acid, brown amorphous substance precipitated out on dilution with water and acidification; 23 per cent oxalic acid; 23.4 per cent phenols (extracted by ether); 6.3 per cent tannins extracted with ethyl acetate. The lignic acid which was free from chlorine gave only traces of methoxyl. It contained 62.9 per cent carbon and 4.63 per cent hydrogen. If this acid is fused a second time with NaOH it yields further amounts of oxalic, etc. The final summative results of such repeated fusions are: 31 per cent oxalic acid, 38 per cent phenols, 10 per cent tannins, and small amounts of methyl and ethyl alcohols, all based on chlorin-free lignin. The phenols obtained directly from the crude chlorolignin, and also from the lignic acids were exhaustively investigated. The former are made up of mixtures of various phenol carboxylic acids, which contain either one or two heterocyclic groups, and varying percentages of methoxyl. Pyrocatechol and protocatechuic acid (previously found in all alkali fusions of lignin) were not obtained from chlorolignin. The proposed structural formulas of the various phenolic fractions are given but no comment is made on the commercial applications of the new pulping process or its by-products. Oskar A. Müller, Zürich. Papier-fabr. 32, No. 29, 329-332; No. 30, 338-342; No. 31, 347-351; No. 32, 354-358 (1934).

◆ Groundwood

The patent claims a method which permits bolts of wood to be held lengthwise against the stone at an oblique angle to the shaft (b) during the grinding process. This result is obtained with slight power consumption and by the simplest means, with the complete



conversion of the wood into long-fibered pulp, by forcing the bolts (a) against a pulpstone, of which the working surfaces (c^1) have been hollowed out concavely as shown in the two figures. Heinrich Lund, Garenfeld b. Kabel. German Patent No. 599,538, Class 55a.

◆ Metallized Paper

To overcome the difficulties of the methods now in vogue which often give rise to metallized papers insufficiently uniform for use in the electrical industry, the present patent simply incor-

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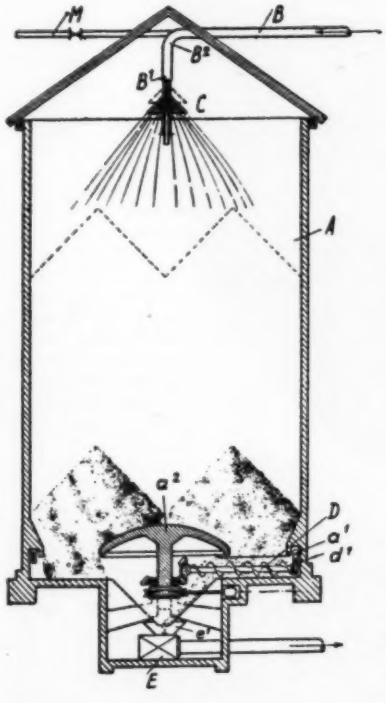
porates powders (like pure iron, nickel, cobalt, copper, aluminum, or chromium, or even alloys like Permalloy, etc.) directly into the beater together with the pulp. A protective colloid serves to keep the finely divided metals in suspension and to distribute them uniformly throughout the mass. As an example: 100 parts by weight of unbleached soda, 3 parts of potato starch paste, 3 parts of rosin size, 4 parts of papermakers' alum and 1000 parts of iron powder (made by decomposing ferrocarbonyl) are brought into admixture. The paper made by this formula retains the iron as such, and contains only traces of the oxide. I. G. Farben-Industrie, A. G., Germany. French Patent No. 767,561.

◆ Bleaching of Partially Dried Pulp

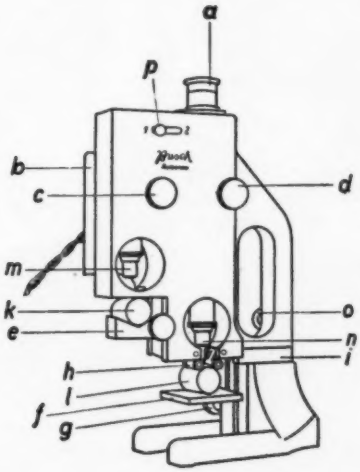
In the figure, the compressed air-line (B) serves to convey the stock, discharging it at the top of a cylindrical tank (A) that is used to receive it. At its outlet (B) it has a nozzle (B^1) which is above the cone-shaped distributor (C). The latter may be raised or lowered at will and functions in scattering and showering the stuff to the floor of (A). The bleach liquor is led through pipeline (M) that discharges into (B) so that the intermingling of stock and liquor (in countercurrent) occurs at the



elbow (B^2). The appliance for the removal of pulp dropping to the floor of (A) consists of the conveyor worm screw (D), at the outer end of which is a cogwheel drive that gears into the teeth of a fixed circular crown, thus permitting (D) to travel all around the floor of the tank. The other (inner) end of the screw is protected by the mushroom shaped globe (a^2) below which, in a pit, is an air compressor (E) that serves to remove the stuff that has been previously conveyed into the funnel (e^1). The pulp is removed through the conduit pipe at the lower end, in the direction of the arrow. Dr. Ing. Alois Danninger, Steyrermühl, Austria.

◆ Simplified Instrument for Examining Surfaces

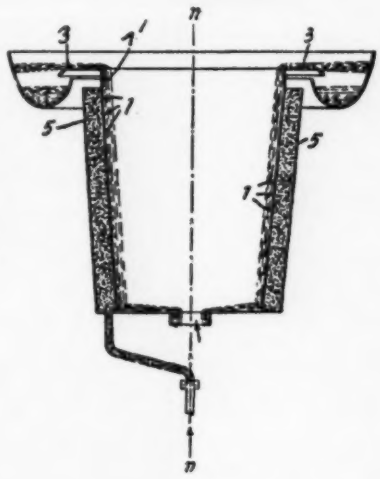
Simplifying the instrument for examining surfaces by means of reflected light, originated by Stach, the following device, it is claimed, will withstand rough wear and may be used in the control, routine examination of papers and textiles, or even cylindrical objects. While the magnifications lie only between 30 and 70 diameters, due to very even illumination, fine cracks and unevenness of surface, as well as small pores and scratches become readily visible. The instrument is shown in the illustration. The tube carrying the single eyepiece (a) has no fine screw adjustment, but is pulled out or pushed in at the will of the observer. Case (b) contains the two frosted bulbs which are of such a nature and so placed that no resistance need be introduced and that the lighting current may be used di-



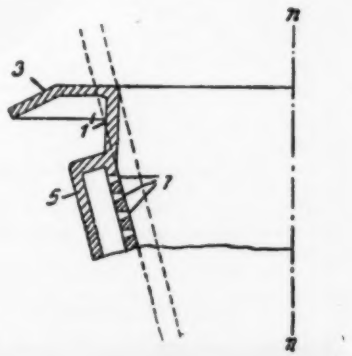
rectly. These lamps (not shown in the illustration) allow the light to fall uniformly at the optimum fixed angle on the object under observation, and they may be conveniently replaced by new ones through an opening at the lower end of (b). The screw-knob (c) serves to bring the standard sample into sharp focus, while (d) has a similar function in the case of the test sample. The block (e) serves to hold cylindrical objects like (k), and a set screw which clamps (e) into place also makes it possible to pull out (e) completely and to reinsert it nearer the objective when flat surfaces are to be examined. The illustration shows only the cylindrical standard (k) and test sample (l) which is held in position on stage (f). Through (g), (f) may be raised and lowered. A feature of the apparatus is that it can be removed completely from its base by simply unscrewing screws at (h), and then pulling out the base props (i). This is resorted to when the test sample is a large flat one, so that the shortened instrument may stand directly on a sheet of any size. The objectives are designated (n) and (m). A.K. Papierfabr. 32, No. 41, 428-9 (1934).

◆ Bleaching Pulp of Low Stock Density

The pulp is introduced continuously into one end of a revolving centrifugal drum (1) with perforated walls, and is removed at the other end, over the rim or ledge (3). Meanwhile, the bleach



liquor which is forced into the chamber (5) that surrounds the drum, penetrates the pulp through the perforations in (1). The interaction between the fibers and the bleach is thus contingent on the pressure maintained in (5) and on the rate of revolution of (1). A claim



provides for a cylindrical ring (1^1) in the case of conical drums, as shown in one of the figures. This is placed parallel to the axis (n-n) of the drum, and may be moved if so desired. Dipl. Ing. Gumal Knopp; Berlin-Wilmersdorf: German Patent No. 601,090, Class 55c.

GOOD VALVES

SINCE 1846

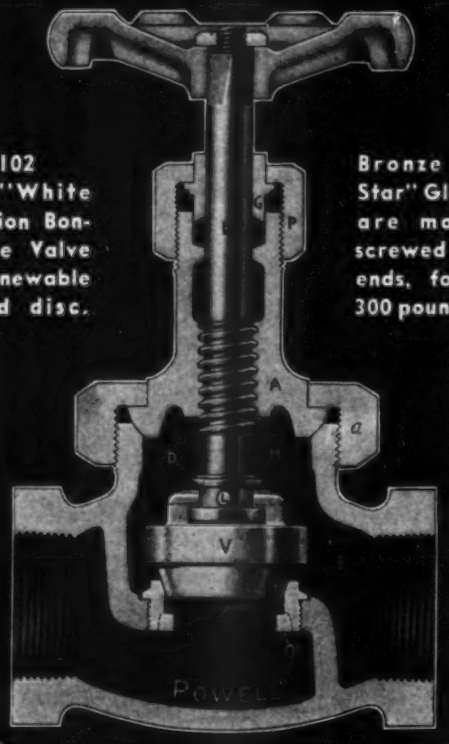


Fig. 102
Bronze "White Star" Union Bonnet Globe Valve with renewable seat and disc.

Bronze "White Star" Globe Valves are made with screwed or flanged ends, for 200 or 300 pounds W. S. P.

If Powell Valves were not a quality product, The Wm. Powell Company could not have lasted so far toward the century mark.

Only a company which gives satisfaction to customers can weather the storms of so long a period as eighty-eight years.

For many years the Powell "White Star" has been the guide to high quality. The years to come will see no dimming of its prestige. Consequently there always will be a demand for the *many-purpose* "White Star" valves that are so practical because of the renewable seat and disc feature.

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POWELL VALVES

The COMMERCIAL OUTLOOK

New York, January 2, 1935.

THE new year starts with a decidedly optimistic sentiment existing in the paper industry. Developments during the last few weeks, together with the very favorable prospects for the future, prompt paper manufacturers and distributors to look ahead with profound confidence as well as much enthusiasm. Certainly, there seems every reason for the belief that 1935 will witness the country making further broad strides out of the depression, if not registering marked improvement in all lines of business.

Statistics are indeed favorable. Practically all the indices show that industry and trade have scored additional gains of no small dimensions over the last couple of months. Pre-holiday retail trade the nation over recorded substantial increases, rising to a higher volume than in some four or five years. Various manufacturing industries, including the steel industry, are forging ahead, gradually but steadily expanding their activity, and the automobile industry is making plans for the biggest year in 1935 it has enjoyed since 1929. Export and import trade of the United States is consistently gaining, month by month. All in all, the outlook is most encouraging, and seems to point to a return of industry and trade in 1935 to nearer normal than since prior to the depression period.

As for the paper industry specifically, reports tell of orders increasing—in number and volume—and of mills in numerous cases finding it necessary to step-up production. Demand for paper is expanding because more paper is being consumed. Jobbers and converters are not buying to stock up but to cover sales or requirements. With general business improving, and to a material degree, consumption of and demand for paper of various kinds should continue to increase. Estimates in the trade are that business in paper this year will register a gain of fully 10 to 15 per cent in volume over the past year. Manufacturers and merchants are displaying a changed attitude; they are possessed of far greater confidence than in a lengthy while, and are proceeding to make plans for business this year on a scale which fully jibes with their optimistic feeling regarding the future.

Figures secured in one quarter of the trade provide a clear and apt illustration of the paper market situation. Sales of writing paper during the recent holiday shopping season increased 12 to 15 per cent over the year before, this gain being general, and in some sections of the country running much higher. Notable advances were made in the South and Southwest where some stationery departments of retail stores reported increases of 25 to 30 per cent in volume.

Still another significant instance is the very healthy rise in newsprint production and consumption last year. Production and shipments of print paper in the United States and Canada during the first eleven months of 1934 showed an increase of no less than 29 per cent over the same 1933 period. While figures for other classes of paper are not yet available, it is probable gains in line with the increase in newsprint were scored in other divisions of the industry.

The output of newsprint in the United States and Canada in November last was 12.3 per cent above the same 1933 month. In Canada, production rose 24.3 per cent whereas the United States mills in the same month showed a decline of 14.4 per cent. Newsprint mills in this country produced 74,933 net tons in November, against 80,572 tons in the preceding month and 87,567 tons in the similar 1933 month, according to the News Print Service Bureau. Canadian mills manufactured 240,869 tons in November, contrasted with 235,021 tons in September last year and 193,718 tons in November, 1933. Both countries produced a total of 315,802 tons, against 281,285 tons in November, 1933. This was the largest output for November since 1929, when mills in both countries produced 365,775 tons of newsprint.

During the first eleven months of 1934 Canadian mills manufactured a total of 2,357,097 tons of newsprint, contrasted with 1,833,722 tons in the corresponding period of 1933, an increase of 523,375 tons or 28.5 per cent. Only in the record year of 1929 did the eleven months' production exceed that of Canadian mills last year, and then the total was 2,495,628 tons. United States mills continued to make a poor showing, with the eleven months' output last year of 885,194 tons just barely exceeding that of 863,031 tons in the same time of 1933. Shipments of newsprint from mills in the United States and Canada exceeded production in November last by roughly 26,000 tons, to bring stocks at the end of that month down to 64,913 tons, against 90,514 tons a month earlier.

Overcoming four-fifths of the usual seasonal loss from October levels, the trend of newspaper advertising turned sharply upward in November, according to the Editor and Publisher. Advertising in November, measured in the daily newspapers of fifty-two leading cities, amounted to 103,998,808 agate lines, which was 7.2 per cent higher than in November, 1933. The gain in November pushed the eleven-month figures for 1934 10.8 per cent ahead of the similar period in 1933.

Production of paperboard in the United States in October last amounted to 263,679 net tons, representing a big gain over the 233,426 tons produced in the preceding month and also a large rise over the 228,416 tons in the same 1933 month. Board mills produced at 63.9 per cent of their rated capacity in October, against 61.4 per cent in the month before and 60.1 per cent in October, 1933. The October output brought the total for the first ten months of 1934 up to 2,345,817 tons, contrasted with 2,529,464 tons in the corresponding time of 1933.

New orders received by board mills in October called for a total of 255,744 tons, against 228,804 tons in the month before, while unfilled orders held at the end of October were for 68,756 tons, compared with 72,930 tons a month earlier. Shipments of board from mills during October amounted to 226,584 tons, against 198,729 tons in the preceding month, and stocks on hand at mills at the close of October totaled 72,035 tons, contrasted with 71,478 tons a month before and 63,315 tons at the end of October, 1933.

◆ ◆

◆ Unfair Purchases for Export Rumored

There are various reports that paper purchased for export is appearing in the domestic market at prices below those provided for under the terms quoted by the domestic mills to their code authorities.

There is question as to whether these so-called export shipments are actually shipped, or whether these sales are devices by dealers to secure reduced prices on paper for home consumption. The Import Committee of the American Paper Industry is checking all shipments to determine what, if any, such paper has actually been exported and returned.

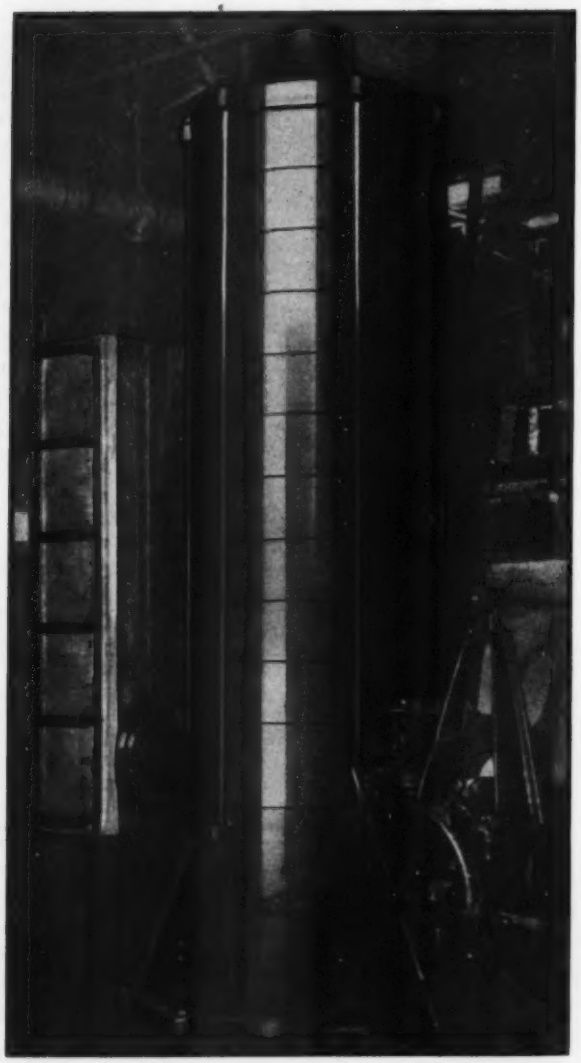
Export statistics of shipments of American paper to Cuba indicate a material increase of business since the Cuban Reciprocity Treaty became effective August 24. Exports in September totaled a value of over $250,000, as compared with $180,000 in August.

A shipment of paper from Japan in 1932, entered as Standard Newsprint, but found to be partially bleached, is involved in a California protest to the United States Customs Court. The importer is protesting the classification of this paper as dutiable printing paper.

The United States Customs Court has decided that Canary News in rolls is dutiable, even though the paper involved was used by a newspaper. The case involved two importations at San Diego, Calif., but the trial was at Seattle. The decision was rendered on the basis that such paper is not chiefly used by newspapers, the color being the basic issue.

◆ ◆

◆ AT THE January meeting of the Board of Directors of The American Rolling Mill Co., Col. A. E. Deeds, of New York and Dayton, was made a director.



If You Have Power to Waste

—WE DO NOT have any message for you at the beginning of this new year. ◆ If, however, you are tired of excessive power costs we have a real message. Your beating and refining power costs can be reduced materially by eliminating old and obsolete equipment and installing FRITZ VERTICAL HYDRATING AND REFINING MACHINES in its stead. ◆ This saving in power cost will soon pay for the new equipment and further savings will be added profit. At the same time, this machine will enable you to make a better and more salable product. ◆ All of this will enable you to have a happier and more prosperous 1935. ◆ Write at once for information.

LOVE BROTHERS, INC. ◆ AURORA, ILLINOIS

Domestic RAW MATERIALS

◆ Papermaking Rags

The papermaking rag situation is exhibiting strengthening tendencies. In fact, it can be said the market has gone further than develop a strong tendency —it has registered definite advancement on a moderate scale in some of its branches. Certain grades of new rag cuttings have moved upward a bit in price, roofing rags have climbed a little more, and dealers have raised quotations on some other grades.

Strength in the market seems based principally on the small supplies of mixed rags coming in from collection sources, and a larger demand for and a stiffening of prices of roofing stock. The decidedly bullish position of roofing rags, brought about by felt paper mills having cleaned up the market of these rags, reduced importations and prospects of larger consumption, seems to have spread to other grades of rags; that is, in old cottons. In the case of new cuttings, some expansion of paper mill buying, coupled with fairly large exports from this country to Europe, and England in particular, have led to price advances on certain descriptions.

That the roofing rag market is well sold up is evident on all sides. Felt mills, having experienced substantially better business because of the Federal Government's house rehabilitation program, have bought rags freely, and show readiness to take additional amounts whenever found available. Domestic dealers are reported fully sold out for a time, and reluctant to commit themselves further while facing glowing market possibilities in the form of a supply squeeze and price advancement if consuming needs increase as expected.

Prices of roofing rags have firmed to where eastern dealers report sales at 1.15 and 1.20 cents per pound for No. 1 domestic roofing or satinet garments, and 85 to 90 cents per hundred pounds for No. 2 roofing. It is possible, it is stated, that higher prices have been paid for tonnage lots of No. 1, but owing to the shortage of these rags, most sellers refuse to take orders for large quantities. Foreign roofing rags are above a price parity with domestic material, linsey garments quoted up around 1.60 cents a pound and foreign dark cottons at 1.25 cents and higher, ex dock American Atlantic ports.

Sales of No. 1 new white shirt cuttings are reported at prices equivalent to 6 to 6.15 cents a pound f. o. b. dealers' shipping points, while new soft unbleached muslins are held firmly at 6.25 to 6.50 cents at shipping points, light silesias at 4.25 cents, blue overall cuttings at 3.50 cents, fancy shirt cuttings at 2.25 cents, and No. 1 washables at 1.75 cents. Export shipments have removed considerable quantities of some grades of cuttings off the market, and dealers say the supply situation is fairly strong.

The uptrend in roofing stock prices has strengthening influence on other old cotton rags, and dealers ask higher figures for old white and blue cottons. Extra quality No. 1 repacked whites are quoted at 3 cents and more per pound, miscellaneous whites at about 2.50 cents, and repacked thirds and blues at 1.25 cents, f. o. b. shipping points.

◆ Old Paper

As usually is the case, the old paper market quieted perceptibly during December. Most consuming mills withdrew as buyers pending the turn of the year and in preparation for inventory-taking, and dealers in some cases, in their eagerness to procure orders, reduced prices to some extent. Several grades, however, continue in comparatively good demand, and steady quotably. No. 1 hard white envelope cuttings, in particular, are firm, with sales in the East reported at 2.85 cents per pound f. o. b. New York. Old kraft also is moving relatively well on a price level of 90 cents to slightly higher per hundred pounds, as are old corrugated boxes at 40 cents a hundred pounds at shipping points. On the other hand, book stock has eased to 50 cents per hundred pounds f. o. b. eastern centers; ledgers are down to a cent per pound for white and 65 cents a hundred for colored, and white shavings are quotably cheaper at 2 to 2.25 cents a pound for No. 1 hard white and 1.65 to 1.75 cents for No. 1 soft white although above these prices are named for extra quality packing. Minimum fixed prices continue on old folded news and mixed paper, but dealers in some cases—more especially in the East—are said to be selling below the NRA established minima. The fixed basis on folded news to mills is $8.50 per ton ex packers' plants, and on mixed paper $6.50.

◆ Rope and Bagging

Demand which until recently was fairly active for old rope seems to have switched to scrap bagging. Of the two materials, the latter now is livelier, and prices show a stiffening trend. No. 1 domestic scrap bagging is selling at 1.20 cents to slightly higher per pound at shipping points, and roofing bagging at around 70 cents per hundered pounds. Imported bagging is bringing above these prices in most instances. Old gunny bagging is firm at 1.50 cents or more per pound ex dock New York for foreign, and 1.30 cents at points of shipment for domestic. Old rope prices are steady but paper mills have let down in their purchasing. The approximate market level on No. 1 domestic old manila rope is 1.75 to 2 cents a pound.

◆ Mechanical Pulp

Not much activity is noted in mechanical pulp. There is a steady movement from producing to consuming plants against back orders and contracts, but current demand has simmered off decidedly, indications pointing to consumers having their needs covered for a time and electing to hold off further purchases until additional requirements develop. Prices are in a more or less stationary position though such slight changes as have occurred have been in a downward course, as would be expected with market activity as narrow as it happens to be. Domestic producers offering groundwood in the open market are quoting between $27 and $30 per ton delivered consuming points, depending on the freight haul. Canadian groundwood prices are on about this same basis, or $25 to perhaps a shade lower ex dock Atlantic seaboard for pulp brought down to the United States by schooners. Imported groundwood of Scandinavian origin is quoted at $22 to $23 a ton for dry ex dock New York or other American Atlantic ports, with moist but slightly cheaper.

◆ Pulpwood

Steadiness marks prices of pulpwood, and reports tell of a consistent demand developing. Canadian wood is quoted in Upper New York State paper mill districts at $12.50 a cord for four-foot peeled, $13.50 for hand-shaved, and $15 for two-foot rossed.

◆ Chemical Pulp

Domestic pulp manufacturers are kept busy shipping their product against contracts and back orders, but readily acknowledge little fresh demand is arising at present. Papermakers in a large majority of cases appear to have their pulp needs satisfied for a while, and are in little or no mood to add to their stocks or commitments. The result is a distinctly quiet market prevails. Despite the dullness, quoted prices are maintained, more especially on sulphite pulps, which are fully sustained on established market levels. Prime bleached sulphite is 2.75 cents a pound, ex dock Atlantic seaboard, and prime unbleached 2.10 to 2.20 cents for ordinary grades and 2.25 and 2.30 cents for extra strong grades. Domestic and Canadian producers of kraft pulp are quoting on a competitive level with Scandinavian kraft, or in the vicinity of 1.90 cents a pound delivered paper mills, depending on the freight from producing to consuming centers. Southern kraft is reported practically out of the picture insofar as open-market sales are concerned. Bleached soda pulp remains steady on a quotable basis of 2.50 cents a pound delivered at book paper mills.

◆ Chemicals

Contracts are being arranged for papermaking chemicals, and steady prices generally obtain. Caustic soda is 2.60 cents a pound for the solid product at works, and soda ash 1.25 to 1.40 cents. Bleaching powder is quoted at 1.90 to 2.10 cents per pound, brimstone at $18 to $20 and salt cake at $12 to $14.

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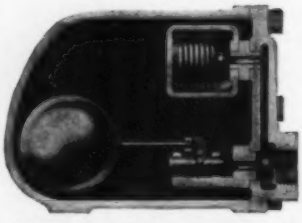

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Import and Export MARKETS

IMPORTS

◆ Wood Pulp

It's been a long while, so reports from the trade say, since the market for imported wood pulp has been quite so dull as is now the case. Paper and board manufacturers are evincing very little disposition to buy; that is, in tonnage quantities, or any scale approaching that seen in ordinary busier periods of the year. What the reason is for the hold-off policy of consumers—perhaps it is no one particular reason, but a combination of reasons—is difficult to say, but the fact remains demand is near the proverbial vanishing point and the market is developing little activity.

A good many, probably a large majority, of paper mills are understood to have their anticipated pulp requirements well covered for a time. There are, no doubt, some mills sledding along on thin ice, which is to say they have small stocks of pulp on hand and are refraining from augmenting their supplies while apparently satisfied to wait. The feeling common among pulp consumers seems to be that any changes in prices likely to occur over the next few months will be downward, and that this justifies them holding off making further purchases for the present unless, of course, having definite needs to cover. Another factor contributing to the prevailing slow demand is the tendency among paper manufacturers away from accumulating and carrying large stocks of raw material while aiming to keep their assets more liquid. Still another is the uncertainty of the paper market; while it is true recent developments have been of very encouraging character and prompt manufacturers to believe the future holds much promise for a broader and steadier demand for paper, there is still a lack of willingness in most consuming quarters to stock up raw material against even seemingly assured, though not as yet definite, requirements.

Reports from primary sources indicate firmness in pulp markets abroad, at least as far as the immediate condition is concerned. Most pulp mills in Europe are well sold up for the present, and are not pressed to seek orders for their current production. Should demand from the United States continue as restricted as it has been lately, which scarcely seems probable, this situation might change and pulp manufacturers in Scandinavia and elsewhere in Europe may evince eagerness for orders, but this remains to be seen.

Meanwhile, the bulk of business transpiring in imported pulp in the United States involves supplies which evidently comprise surplus holdings and which paper manufacturers themselves are reselling in the market at prices under established levels. The quotable basis on prime bleached sulphite is 2.75 cents upwards, according to quality, ex dock American Atlantic seaboard, and on unbleached sulphite 2.10 to 2.20 cents a pound for ordinary prime grades and 2.25 and 2.30 cents on easy bleaching and Mitscherlich sulphites. An established price of 1.65 cents per pound on prime Scandinavian kraft pulp has been decided on for 1935, and sales are usually at this figure.

Imports of chemical wood pulp into the United States during October rose to a higher total of any previous month of 1934, reaching 148,157 long tons of a declared value of $6,078,351, according to U. S. Department of Commerce reports, contrasted with 124,591 tons of a value of $4,971,827 in the preceding month, and 170,677 tons of a value of $6,112,297 in October, 1933. The October imports brought the total for the first ten months of 1934 up to 1,188,773 long tons of chemical, against 1,209,732 tons in the corresponding time in 1933. Groundwood imports in October amounted to 14,722 long tons, valued at $291,467, and made a total for the first ten months of last year of 136,005 tons, compared with 150,379 tons in the same 1933 period.

◆ Paper Stock

Imports of papermaking rags into the United States during October last amounted to 8,966,088 pounds, valued at $112,750, showing an increase over the 7,715,972 pounds of a declared value of $123,763 in the month before, making a total for the first ten months of 1934 of 89,656,857 pounds, valued at $1,133,039, against 148,479,767 pounds of a value of $1,157,123 in the similar time of 1933, according to U. S. Department of Commerce figures. Imports of miscellaneous paper stock, including old rope, bagging, waste paper, etc., were 3,339,522 pounds of a value of $31,655 in November last, making a total for the first ten months of last year of 44,444,289 pounds of a value of $622,215, contrasted with 89,158,178 pounds of a value of $939,093 in the corresponding 1933 period.

◆ Paper

Paper imports into the United States showed a rise, in point of total value, during October last as compared with the preceding month. Receipts reached a value of $7,827,902, according to U. S. Department of Commerce statistics, against imports of a value of $6,505,898 in September last year. Imports during the first ten months of 1934 registered a substantial gain over the same period of 1933, amounting in value to $70,585,098, against $63,228,679. Newsprint imports in October last were valued at $6,990,106, making a total for the first ten months of 1934 of $61,943,536, contrasted with $56,172,914 in the similar 1933 period. Next in importance in paper imports was cigarette paper, of which $3,590,857 worth was imported in the first ten months of last year, against $2,605,119 in 1933.

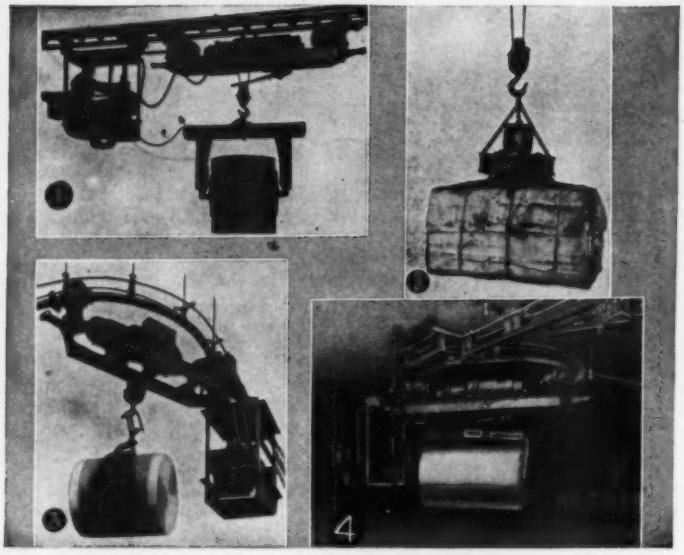
EXPORTS

The United States improved its position in paper exports appreciably during 1934, judging from statistics covering the first ten months of the year. Shipments of all kinds of paper and board out of this country in October last reached a total value of $1,559,506, compared with $1,746,759 in the preceding month, and bringing the total for the first ten months of the year up to $15,549,545, showing a considerable gain over the exports valued at $11,505,228 in the corresponding time of 1933.

Significant are the figures pertaining to exports of paper base stocks from the United States. Shipments during the first ten months of 1934 were valued at $6,593,837, or more than double the exports valued at $2,916,938 in the same time of 1933. Of these exports, sulphite wood pulp accounted for $5,513,519 last year, against $2,292,918 in ten months of 1933.

Newsprint exports in October amounted to 3,165,954 pounds, valued at $66,935, making a total for ten months last year of 37,562,414 pounds of a value of $796,735, contrasted with 15,901,250 pounds of a value of $322,049 in the corresponding 1933 period. Exports of uncoated book paper in ten months of 1934 were valued at $729,832, against $729,861 in the same time of 1933, while wrapping paper exports were valued at $1,567,346, against $1,003,558, and writing paper shipments were valued at $1,023,088, against $689,468. Exports of tissue and crepe paper last year were valued at $527,759 in ten months, against $463,326 in 1933; of sheathing and building paper, $186,927, against $146,597; of toilet paper, $494,441, against $434,312; of blotting paper, $152,191, against $120,862; of cover paper, $110,698, against $84,605, and of surface coated paper, $645,553, against $485,696.

Boxboard exports in ten months last year reached a value of $778,969, compared with $610,863 in the same time in 1933, and of other paperboard, $653,200, contrasted with $541,079.



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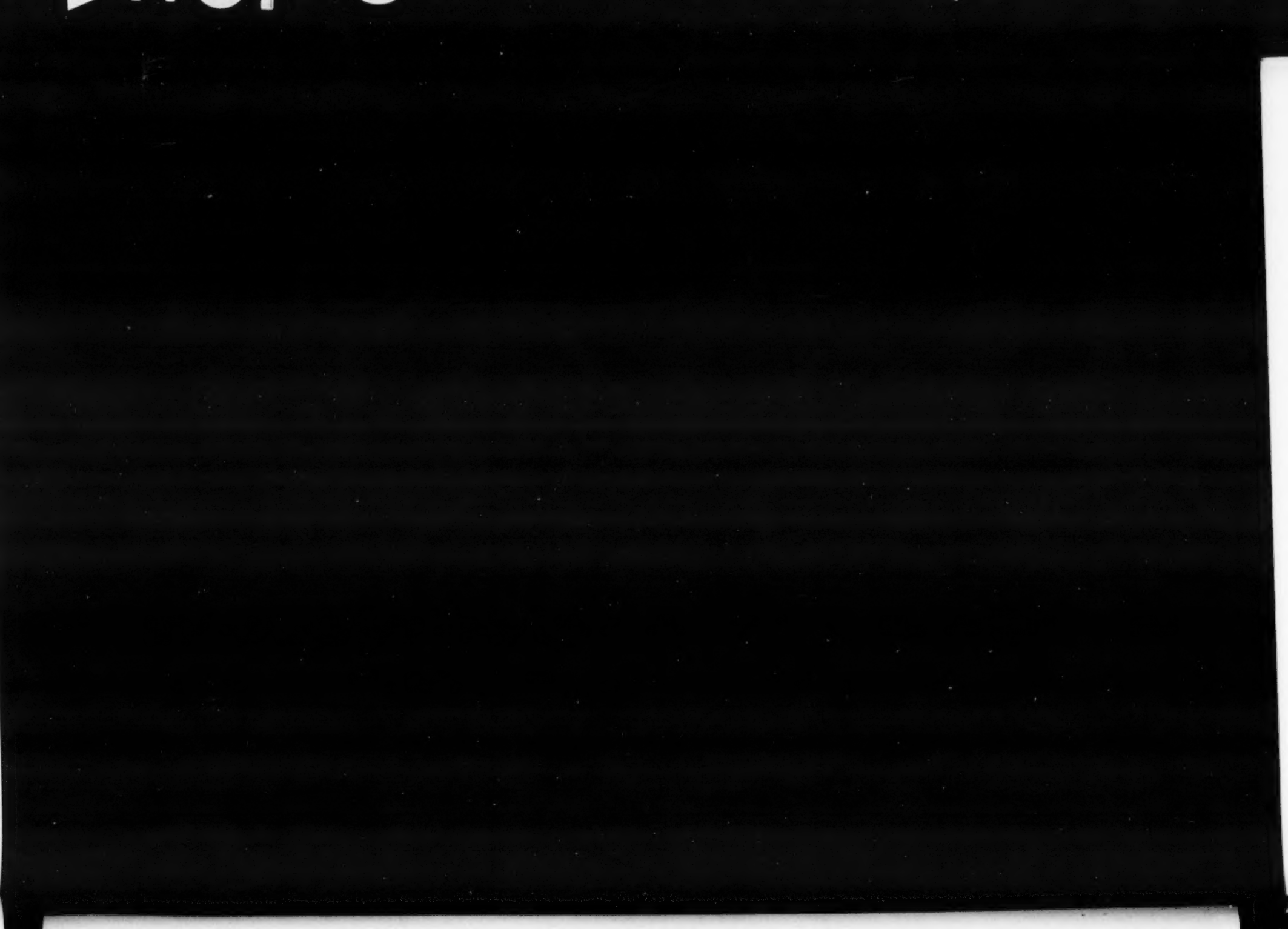
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